Railway Age

SECOND HALF OF 1918—No. 19 SIXTY-THIRD YEAR

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CHICAGO: Transportation Bldg.

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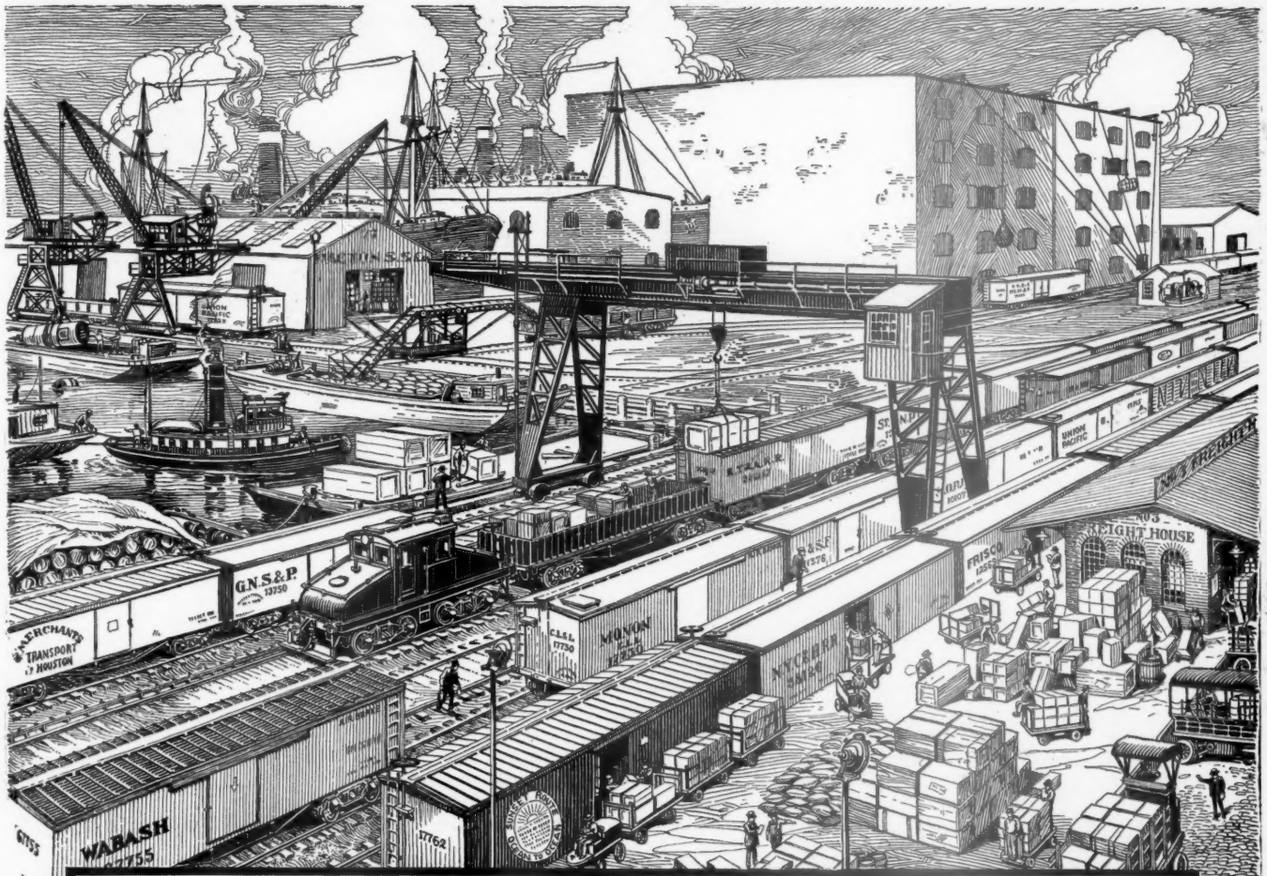

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Freight congestion is being relieved by the use of electric power for the operation of freight handling machinery. Important Eastern marine terminals are equipping with electrically operated winches and hoists, cranes, portable conveyors, storage battery trucks and locomotives. Electric flood lights make the work continuous as the nation's need is speed.

Trackless trains of storage battery trucks and trailers enable 100 men to increase loading from 16 to 40 cars daily.

Fleets of storage battery trucks have reduced ship loading time 35% and car loading time 38%.

At one terminal city portable conveyors are releasing the labor of fifteen men for other work and the freight is unloaded in one-third the time required for hand work.

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The General Electric Company has equipped freight handling machinery in many places with electric motors and control equipment and made night operation efficient by proper electric lighting equipment. Its experience in this specialized field may be of service to others. Your inquiries will be given the best attention of experienced engineers.

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GENERAL ELECTRIC COMPANY

General Office, Schenectady, N. Y. **Sales Offices in all large cities**

Railway Age

Vol. 65 November 8, 1918 No. 19

A Train Load of German Prisoners. Photo Copyright by Underwood & Underwood, N. Y.

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WE GUARANTEE, that of this issue, 7,725 copies were printed; that of these 7,725 copies 7,088 were mailed to regular paid subscribers, 74 were provided for counter and news companies' sales, 291 were mailed to advertisers, 133 were mailed to employees and correspondents, and 139 were provided for new subscriptions, samples, copies lost in the mails and office use; that the total copies printed this year to date were 392,192, an average of 8,715 copies a week.

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EDITORIAL

Railway Age

Announcement

Samuel O. Dunn, editor of the *Railway Age,* sailed recently for a trip to England, France and Belgium, and will be absent about two months. He goes as a member of a party of fifteen business paper publishers and editors, who are making the trip at the invitation and as the guests of the British government. It is the intention to give the members of the party opportunity to study the military, industrial, economic and other conditions in the countries mentioned, both through conferences with their political, military and business leaders, and by means of visits to their great centers of population and industry.

The party was made up and goes under the auspices of the British Ministry of Information, represented in this country by the British Bureau of Information, of which Geoffrey Butler, with headquarters in New York City, is Director.

The other members of the party are H. M. Sweltand, president, United Publishers Corporation, New York; David Beecroft, editorial director, Class Journal Company, New York; A. J. Baldwin, vice-president, McGraw-Hill Publishing Company, New York; H. C. Parmelee, editor, Metallurgical & Chemical Engineering, New York; Floyd W. Parsons, Editor, Coal Age, New York; E. B. Taylor, advertising manager, Dry Goods Economist, New York; H. Cole Estep, editorial director, Penton Publishing Company, Cleveland; H. G. Lord, president, Textile World Journal Co., New York; W. W. Macon, associate editor, Iron Age, New York; F. F. Cutler, president, Shoe & Leather Reporter, Boston; Allen W. Clarke, president, American Paint Journal Company, St. Louis; Edward L. Darville, associate editor, Hardware Age, New York; H. L. Aldrich, president, Aldrich Publishing Company, New York, and Roger W. Allen, president, Allen-Nugent Company, New York.

It is expected that during his absence Mr. Dunn will be able to send back some articles to the *Railway Age;* and we believe his comments on the foreign situation, written both while he is away and after he returns, will be of no little interest to the readers of the *Railway Age.*

A Vast Industrial Army

During the convention of the Association of Railway Electrical Engineers, one of the speakers made use of a striking means of illustrating a woeful lack of efficiency in the matter of industrial lighting. After careful computation he was obliged to conclude, he said, that the labor of an army of more than a million and a half of men was lost in the United States from no other cause than from the lack of proper lighting. If better and more scientific methods of illumination are within our reach it is high time that greatly increased activity were started along the lines of correct lighting. The labor situation has never before been as serious as it is at present. If proper lighting will result in effecting economy and increasing production equivalent to even a small proportion of the labor of a million and a half of men no time should be lost in making the necessary changes, regardless of cost.

Good Advertising Space

Notwithstanding the unprecedented amount of advertising which the Liberty Loans had, there were some opportunities which were neglected. One important one was the use which might have been made of the car windows of coaches and and Pullmans. It is, of course, a well recognized fact that a man may see a particular article or particular fact advertised a thousand times and not be moved to act, and the thousand and first time there is something about the advertisement or about his mood which "sells" him the idea. When a man is traveling in a railroad car he is generally in both an observing and a receptive mood. The extent to which card advertisements are used in street cars and subways is a recognition of this fact. To have advertised the Liberty Loan by means of a transparent poster, such as used in Europe, pasted across the next to the end window facing in on coaches and Pullmans would have been a comparatively inexpensive method of reaching the public in a new way at a particularly opportune time. The idea might well be used now in connection with the United War Work Campaign. Besides using the next to the end windows, a poster might be used filling only a part of the space of the middle windows on each side, with the poster facing out. While this would be unsuitable for through express trains, on local trains it should be a very effective method of reaching quite a large class of people in addition to the actual travelers on the train.

Locomotive Brick Arch Maintenance

With conclusive proof that the locomotive brick arch will save fuel and increase the hauling power of locomotives, it is strange that greater care is not taken in its maintenance and that a more extensive program of equipping old locomotives with arches is not carried out. The most authoritative tests of brick arches yet made are those of the Pennsylvania Railroad which were described in its bulletin No. 30, an abstract of which appeared in the *Railway Age Gazette* of May 4, 1917, page 933. It was shown that the drawbar horsepower of locomotives may be increased from 12 to 16 per cent and it is a generally recognized fact that the brick arch makes possible a fuel saving of at least 10 per cent. Numerous instances have been brought to our attention where locomotives are permitted to run without the arch brick in place. With the surplus of power reported at the present time there is no excuse for this as there is plenty of fire brick available in the market for locomotive use. Furthermore, as locomotives pass through the shop no better investment could be made than to equip them with arches. The best figures available indicate that only about 60 per cent of the locomotives in this country have brick arches. There has been a material decrease in the application of fire brick arches to old locomotives this year as compared with last, although every new locomotive is equipped with an arch. With the extreme demand for fuel economy it is hard to reconcile the fact that this matter has not been given more serious consideration.

The Brooklyn Disaster

The appalling train wreck in Brooklyn, N. Y., on November 1, the worst disaster on rails that has ever occurred in Greater New York, happens at a time when, unfortunately, petty political differences color the discussions concerning the causes; but the real difficulty is extremely simple. A public service commissioner lays the blame on Mayor Hylan. Mr. Hylan was formerly a locomotive runner for the Brooklyn Rapid Transit Company, and is said still to be a member of the Brotherhood of Locomotive Engineers; he knew of the proposed strike of the brotherhood men and telegraphed to the officers of the company asking them to avert the strike, but did not ask the men to defer their walk-out until the Public Service Commission could have time to consider the controversy. Others blame the strikers, on general principles; and the main charge against the company is that it did not show proper respect for the National War Labor Board. These charges may be well-grounded, but they involve a long inquiry; and such inquiries seem never to afford the least assistance in getting at the bottom of the trouble, in train accident investigations. The published evidence indicates the real difficulty in Brooklyn as simply the neglect of some officer to see that no motorman was intrusted with a high speed passenger train until he was thoroughly acquainted with the road. Whether it was the highest operating officer or the lowest, or some one between these grades, who was immediately at fault, is not yet disclosed. This requirement seems to be neglected because of its very simplicity. Men who are well acquainted with the road will make blunders; the great majority of runners have a full knowledge of the road before the superintendent ever has occasion to ask about it; and so a vital element is left at loose ends. In the Nashville collision of July 9, last, the absence of an experienced trainman and the presence of a green man in his place, was one of the tragic elements which, if it had been otherwise, probably would have prevented the collision.

Freight Operations for August

As the unprecedented winter of 1917-1918 recedes farther into the distance the statistics showing the efficiency of freight operation reflect an increasing improvement. The monthly report compiled by the Operating Statistics Section of the Railroad Administration shows an increase in the ton-miles of revenue freight handled in August of 7.6 per cent, as compared with August, 1917, while for the eight months' period there was an increase of 1.1 per cent. Up to July 1 the railroads this year had handled less ton-miles than during the first six months of last year, but the increase in July produced a gain of one-tenth of one per cent for seven months and the August showing made a still further improvement. The improvement accomplished under the direction of the Railroad Administration, as far as this report indicates, has been principally in the increased train and car loading as compared with the results gained last year and in spite of the decline in the speed of movement as indicated by the reduced mileage per car and per locomotive per day, 4.8 per cent more ton miles were handled per freight locomotive per day and 3.3 per cent more ton miles per car per day. The reduced mileage per day may doubtless be explained in part by a reduction in the average haul as a result of the efforts toward short-routing and the elimination of cross-hauling, which have been particularly effective in the case of coal under the zone system. A shorter average haul would tend to bring down the mileage per day because of the greater effect of the time required at terminals. The proportion of empty car mileage in August also continued to show an increase, from 31.2 per cent in 1917 to 32.4 in 1918. This is probably one effect of the plan of centralized regulation of car distribution, under which empty cars are ordered to the place where they are needed for loading instead of being required to work their way, but it is believed that better service results, sufficient to justify the increased haulage of empty cars.

Latitude in Methods of Reinforcing Cars

Ever since this country entered the war, the railroads have struggled with the problem of reinforcing old equipment. It has been necessary to put cars of weak construction in service, and with the car service rules suspended the proportion of these cars remaining on the tracks of the owning roads has been so low that little reinforcing work could be done. Largely as a result of this condition, it has been impossible to make much headway in reducing the number of heavy bad order cars. The high percentage of cars in bad order off the home roads is particularly striking. The Railroad Administration has recently issued instructions for reinforcing which should help the situation somewhat. It seems, however, that much better results could have been secured had the roads been allowed more latitude in the method of doing the work, particularly in applying metal draft arms. Of the cars held out of the service, probably 80 per cent are in bad order on account of defective draft gear. It is obvious that to remedy this, the draft attachments should be strengthened instead of repeatedly repairing them in kind. The Division of Operation has specified that draft arms shall be of cast steel. Because of the fact that the reinforcing is limited to this one material, the roads must secure the draft arms from the owner. It is necessary to hold the car on the repair track and write to the owning line for the material, and it often happens that the roads do not have draft arms for that particular class of car. It is then necessary to follow the original construction in repairing the car. A number of roads have used, for reinforcing wooden cars, draft arms that are built up of plates and channels. Such members can be designed so that they will fit many classes of cars with but slight alterations. The amount of rolled shapes and plates required is almost negligible and the saving in man-power that could be effected by using this type of construction should be sufficient to outweigh the minor disadvantages. It is to be hoped that the Railroad Administration will revise its instructions and permit the roads to apply built-up draft arms in order that the work of reinforcing wooden cars may be accelerated.

Increase Tie Production

ONE OF THE MOST SERIOUS problems now confronting the Railroad Administration in the maintenance of the roadway is that of securing an adequate supply of ties. In a report submitted to the director general by Hale Holden covering conditions in the Central Western region for the month of September, the statement was made that there was a shortage of 6,200,000 ties or 120 ties per mile of line on the roads in that region on September 1. This indicates a deficiency of about 40 per cent and is fairly typical of conditions over the country. Furthermore, this exists in spite of the fact that many roads, particularly those which use treated ties, maintain a normal stock equivalent to nearly a year's requirements and these roads are only beginning to experience a shortage. From present indications conditions will be much worse next year unless prompt measures are taken.

Part of the responsibility for the present situation comes from the shortage of labor, which is universal in all industries, for the contractors have been unable to maintain large enough forces to produce the usual number of ties. Another contributing cause was the ill-advised action of the central

purchasing committee last spring which aroused the opposition of the large tie producers and caused a number of them to transfer their activities to other channels. Their hostility, having once been aroused, the promulgation of standard specifications and uniform prices for ties, excellent measures in themselves, served to widen the breach still further, as a result of which the production of ties is now far below normal—a situation which forecasts trouble next year.

A movement is now being inaugurated which has large possibilities for good or for trouble. The St. Louis Chamber of Commerce has taken the initiative in calling a two-day meeting of tie producers at St. Louis on November 19-20 to perfect an organization which will afford a channel for communication and co-operation with the United States Railroad Administration and other branches of the government in matters relating to the manufacture and sale of ties. This meeting should provide an opportunity for the discussion of the controversies which have arisen between the Railroad Administration and the tie producers and offers a great opportunity for the harmonizing of the differences which now exist. It will be unfortunate if the meeting develops into the formation of a united opposition to the Railroad Administration at a time when ties are so seriously needed. In the end, uniform specifications are of advantage to the manufacturer of ties, as well as the roads using them. Likewise, uniform prices, determined with a full knowledge of the cost of production and allowing a fair profit, insure a producer against losses which has been common in the industry. It has been unfortunate that an antagonistic spirit has been created. It is to be hoped that representatives of the Railroad Administration and of the tie producers will take a sufficiently broad view of the entire situation that this meeting may be productive of real constructive effort to protect the interests of both sides and to increase the output of ties to meet the present demands.

Standard Freight Rates

IN PROPOSING to put into effect throughout the greater part of the United States a system of "scientific" scales of class rates graded according to distance, the Railroad Administration is undertaking to develop on a large scale a principle toward which the Interstate Commerce Commission has been working for a number of years and which the state commissions have followed to an even greater extent. Regulation of rates by commissions has naturally tended toward the adoption of distance as the principal factor in making rates and this has been particularly true where commissions have been authorized by law to initiate rates themselves, as in the case of the numerous state railroad commissions that have prescribed mileage scales based on someone's formula for ascertaining the cost of service. The Interstate Commerce Commission, not having the power to initiate rates, has not carried the idea so far, but where it has had to prescribe rates to be substituted for those in existence in order to remove discriminations or other causes of complaint it has quite frequently prescribed distance scales or scales in which mileage was the predominant factor, with modifications as concessions to the commercial conditions on which railroad men have usually placed greater emphasis than they have upon the factor of distance.

While commission regulation of freight rates has undoubtedly had a salutary effect in removing most of the unjust discriminations which had grown up in the days of unregulated rate making and unbridled competition in rates, it has hardly attempted to bring about in a broad way any particular "system" of rate making. Except in particular cases, or where, as heretofore mentioned, state commissions have bodily prescribed scales of rates, rate regulation, while gradually tending toward the cost of service and distance basis of rate making, has in practice usually regulated rates with reference to the numerous conditions which railroads have used in their own rate making, merely substituting the judgment of a public body supposedly free from selfish interest and prejudice for that of the practical railroad men who frequently did have the selfish interests of their own companies and sections of the country to consider.

While attempting to prevent the kind of discriminations that resulted from the railroad methods of rate making, government regulation has never been able to prevent, and, in fact, has been responsible for, another class of discriminations resulting from the effect of different policies of regulation and from the competition of the selfish interests of some of the states whose commissions had power to make rates, and railroad officers in recent years have been nearly as vociferous in complaining of the discriminations resulting from conflicting state and interstate regulation as the shippers and commissions formerly were in complaining of railroad discriminations.

Now the Railroad Administration, having large powers of its own and also being comparatively free from the restrictions of the commissions, is seking to take advantage of those facts and of the at least temporary absence of competition between railroads, not only to bring about a scientific system of rate making, but also to do away with the conflicts and discriminations resulting from simultaneous state and interstate regulation. The plan, which was described in last week's issue, is confined for the present to class rates without affecting commodity rates, and to application only within prescribed zones and not interterritorially. The Railroad Administration has worked out scales of class rates, graded by distance up to 1,000 miles and has divided the country—exclusive of the Official Classification territory, where rates are already on a more systematic basis than in other parts of the country—into various zones where the rates are to be 75 per cent, 100 per cent or 120 per cent, respectively, of the rates of the standard scale, the percentages representing the differences in conditions affecting the cost of service in the different parts of the country. While the commodity and the inter-zone rates are not to be disturbed, at least for the present, the zones are each large enough to contain several states. The application of the standard scales therefore would put out of business various existing scales created in most cases by state commissions, as well as some interstate scales created by railroads, besides removing many of the "rate walls" erected by state commissions for the protection of the shippers of their states and the consequent discriminations which have frequently resulted to the prejudice of the shippers located in other states or to those engaged in interstate commerce.

Therefore, to the long list of practices which the Railroad Administration has taken advantage of the centralized control and the absence of competition to standardize, there must now be added standardized freight rates and many who will deplore the idea of standardizing rates will have their objections tempered by the fact that the state commissions are also to be subjected to the standardizing process. The railroad men that advocated centralized regulations for the purpose of bringing about an elimination of the conflicts between state and interstate regulation and their resulting discriminations, succeeded only to the extent of creating a considerable body of public opinion in support of their idea. Instead of centralized regulation they got centralized management as a probably necessary consequence of the breakdown of the system of regulation which they had so strongly criticized, but they at least have the satisfaction of seeing some of their ideas vindicated by the government.

Given a free hand to operate the railroad system of the United States in the most efficient manner possible and with an incidental purpose of conducting at the same time a laboratory experiment in government operation, the Railroad Administration has not long allowed itself to be hampered by the numerous restrictions which a dual system of govern-

ment regulation had thrown around the operation of the roads by private corporations. It is interesting to note occasionally how many problems the Railroad Administration has found time to attack in addition to its paramount job of increasing transportation efficiency as an aid to winning the war and it might be easy to question the wisdom of upsetting rate conditions as well as so many other conditions at a time when war itself is making so many revolutionary changes which are inevitable, but as the war job is apparently proving to be somewhat easier than had been anticipated it is possible to manifest considerable interest in the outcome of the proposed experiment with scientific freight rates.

In this case the Railroad Administration is displaying a greater degree of diplomacy and of tact than it has found time for or has considered necessary in many instances. Instead of attempting to force its plan into effect, it has submitted it to the federal and state commissions and to shippers' organizations in a tentative way for their suggestions and criticisms and apparently it intends that the proposals shall be given the fullest consideration before any action is taken. There is much more of political and other kinds of high explosive in a proposal to standardize freight rates than, for example, a plan of standardizing cars and locomotives or even demurrage rules. Already there are indications that the state commissions will not welcome the proposed interference with their former prerogatives and there will naturally be some criticisms from the shippers and committees who are adversely affected in the Procrustean process of bringing about uniformity. The Railroad Administration has tackled a large problem, but one which presents a wonderful opportunity for substituting order for a condition somewhat approaching chaos.

New Books

Proceedings of the American Railway Engineering Association. 1569 pages, 6 in. by 9 in. Bound in half morocco, cloth or paper. Published by the American Railway Engineering Association, Karpen Bldg., Chicago. Price half morocco $7, *cloth* $6.50 *and paper* $6.

The contents of the volume for 1918, as with its predecessors, is divided between reports of committees, 1074 pages; discussions, 194 pages; and monographs 301 pages. The convention report this year is distinctive in that it includes the reports of two new committees, namely, those on Economics of Railway Operation and Economics of Railway Labor. The report of the first named is more or less of an introductory nature although it included 39 pages devoted to a bibliography of the subject. The report on Economics of Railway Labor, being an exceptionally live subject at the present time was a basis for one of the most important reports presented at the convention last March. The discussion of this report also includes valuable information, particularly on labor saving devices. The report most far reahcing in its influence is that of the special committee on Stresses in track covering 184 pages and introducing material not previously available in any form. Valuable scientific data of original character is also presented in the report of the committee on Iron and Steel Structures covering impact tests on structures carrying electric locomotives. There is also a set of specifications for movable bridges. Only two monographs are included in his year's proceedings, one on screw spikes and tie plates and the other on the design of docks and wharves by W. H. Hoyt, assistant chief engineer, Duluth, Missabe & Northern. The first one covers by far the larger proportion of the space and is an exhaustive report on this subject by a joint committee composed of officers of the Pennsylvania Railroad and the Pennsylvania Lines.

Letters to the Editor

Standardize and Conserve Paper

BUFFALO, N. Y.

TO THE EDITOR:

I have read your journal and have been a contributor for nearly 35 years—before Wellington's time—and it is only lately that I have seen anything favoring the conservation of paper. I have argued time and again for a rational use of letter heads, catalogs, specifications, etc., but to no avail. I think you can buy envelopes varying in size by eighths of inches, some long, some wide, some short and *ad infinitum*.

Many people are opposed to standardization, but when 90 per cent of the business men use 8½ in. by 11 in. paper why not everybody—*"eventually, why not now"?*

EMILE LOW,
M. Am. Soc. C. E.

Standardization

TO THE EDITOR:

We are now about to enter into a phase or cycle of standardization which needs to be keenly observed by every thoughtful mechanical man; laying aside all prejudice let us view the experiment broadly and with unbiased minds.

For the time being every pet idea must be relegated to the background and those things which we have harbored for the most of our lives we are to forget for the present. Fall into line is the command and do with what has been allocated to our territory as if every detail were part and parcel of our own inventive genius. This is what our Government has in effect requested and commanded and as good citizens and soldiers it is ours to obey to the letter. In order that nothing escape our attention, however, we note in passing that first of all we must make new patterns for the new standard locomotives, carry a new stock of gray iron and cast steel parts, a new line of fittings such as checks, water gages, steam valves, turrets, pops, gages, etc., etc., etc. We also note that our reamers, taps, milling cutters and dies are not suitable—nor have we jigs or templates suitable for renewals and repairs. All of which is merely by the way, inasmuch as we are preparing to lay in our stock accordingly so as to have everything in readiness for the next lot of new locomotives.

Now the question is shall we accept these machines as they are without a comment or suggestion? Who is to guide the future design from the pitfalls to which every designer is a victim now and then? How long are these splendid engines to remain as they are? By whose authority are we to assume they will be the 1919 Model Mikado? Who is to follow up their daily performance and what is to be done if some detail is found to be unpractical? Shall we keep to the design, literally renewing those parts which fail, just exactly as they were before they broke, or shall we do as we have done heretofore and strengthen the weaknesses as they occur, keeping a memorandum of the various changes to be made in the next design in order to meet the conditions with which we are confronted on our various divisions. Common sense tells us that we are to face these questions and do the things as we have always done them. Locomotive designing is not yet finished; we must go on and on to perfection, suggesting, experimenting, changing until the highest art is reached and reached again.

Who will then gainsay this plain simple reasoning? Does it not argue into the thinness of air the delusion of permanent design or THINGS FIXED? MILLARD F. COX.

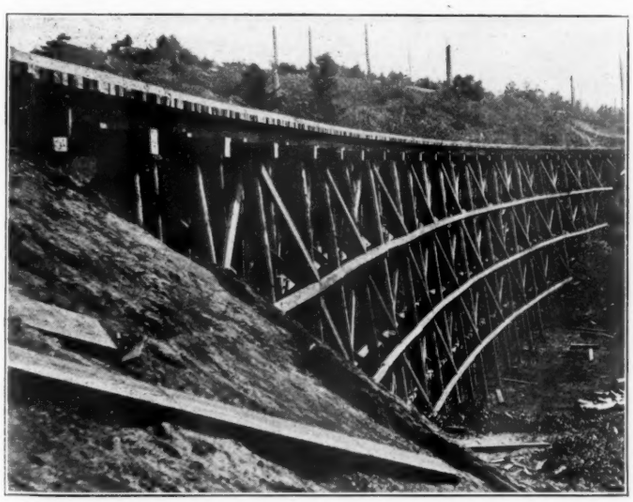
A Construction Camp in the Woods

Soldiers Build Logging Roads in Spruce Forests

Over 350 Miles of New Railways in the Northwest Are Carrying Airplane Lumber to the Mills

By Major W. A. Welch
Division Engineer, Air Service Aircraft Production Board, Portland, Ore.

OUR COUNTRY AND OUR ALLIES must have airplanes and seaplanes to win. Spruce is necessary for them because of its lightness, strength and splendid fiber. No other wood known can approach it in this regard. In no other place except along the western stretch of the Coast Range mountains in Oregon and Washington can it be



Trestle 65 ft. High Built of Round and Square Timbers

secured. The territory is only 400 miles long and 50 miles in width—the wildest and most inaccessible part of the United States. This area was tapped at only six points by branch railroads which cross the Coast Range mountains. Most of the timber lies between these lines.

During the two years preceding the United States' entry into the conflict buyers for Britain and France had made heavy purchases of spruce in the North Pacific states and, as a result, America, when she began seeking this timber found that virtually all the easily accessible spruce along water courses and along logging railroads had been logged. Mountains that climb at acute angles and range from 1,000 to 5,000 ft. in height, forests of giant trees rising from underbrush, impenetrable to man without tools—deep canyons, numerous water courses—clay and soapstone soils—a rainfall from 100 to 140 in. annually, and all of it between November and May. Such is the character of the country which the men entrusted to the immense job of getting out the spruce were called upon to conquer.

In the face of such obstacles, the Spruce Production Division of the Signal Corps undertook this work. There was no organization. There were very few maps and only incomplete and much incorrect data concerning spruce sections extant. The first task was to seek out the heaviest stands of spruce. Unlike other timber, it does not grow in solid stands; instead the heaviest, on an average, totals between 15 and 20 trees out of every hundred.

The cruisers' reports of all these forests were collected and the best bodies of spruce determined. Locating engineers, who were secured from the western railroads, were sent to make reconnaissance and preliminary estimates of railroads necessary to open up these areas. Where these estimates showed the roads would cost $3 or less per 1,000 ft. b.m. for the spruce they would carry, locating parties were put in the field and preparations were begun to rush these roads to completion.

These engineers have been given commissions in the Air Service Air-Craft Production Bureau of the Army. They gladly gave up good positions and salaries, to accept these

commissions and get into this work and have put their very souls into it. Their parties are made up largely of enlisted men who enlisted to get to France and fight the Hun face to face. They have accomplished some of the most difficult and rapid location in the history of our railroads, and have rendered better service to their country than they could have done "over there."

The construction forces were put in the field behind the location parties as rapidly as equipment and supplies could be assembled. Contracts were let on a cost plus basis for this construction work which had to be opened up at every

Tunnel Portal Along a Rugged Shore Line

possible point. Camps were constructed, some entirely of canvas, others with framed mess halls and barracks. Sanitary precautions were carefully taken and each camp was made a military unit under the command of an officer. Experienced grading, logging and construction foremen have direct charge of the work which is all done by soldiers.

Junction of a Logging Spur with a Main Line

Thirteen roads were decided on, ranging from 3 miles to 72 miles in length, and aggregating a total of 173 miles of main line and 181 miles of spurs which, when complete, will open up 1,500,000,000 ft. of spruce. Some of these lines are of standard main line construction because of their value after the spruce is cut; others are temporary and designed only to meet the present emergency. All of them have been designed to carry heavy logging traffic during the rainy season and this has necessitated many types of con-

Track Carried on Stringers Supported by Log Cribs

struction. Where much earthwork was necessary, great care has been taken to provide drainage and all track is being heavily ballasted, in some places beach sand is being distributed one foot thick on all fills before the ballast is placed and the cuts are ditched 18 in. deep. Grades have been

Heavy Cribbing Used at a Place Where Piles Could Not Be Driven

kept under two per cent on main lines wherever possible and curvature under six degrees.

On temporary lines much stringer and pile work has been done, several of the short lines being built entirely on logs, 36 to 60 in. in diameter and 70 to 100 ft. in length, placed on cross logs by hoisting engines and the ties notched into them. This construction has been both cheap and rapid in very heavy timber and since it eliminates most of the clear-

ing and grubbing, which costs $10,000 per mile, there is a great saving. Three-pile bents with sawn caps and stringers have been used where piles can be obtained on the work; this also saves the expensive clearing and provides a roadbed which will outlast the needs and will carry the traffic through the rainy season. Much heavy crib work has been done where fills were necessary on steep soapstone side hills in which piles could not be driven. These cribs are constructed of fir and hemlock logs from 30 to 60 in. in diameter. The work was done with logging equipment.

Many bridges are being built, some 80 and 90 ft. high, these being combination pile and frame trestles with several Howe truss spans. The delivery of material for these bridges was one of the most difficult problems. Where the bridges were near the coast, this material was rafted and towed to sea and released by the tugs two or three miles from the beach, when the tide was setting in. The coast guards, in their surf boats, followed the rafts in until they were near enough to carry lines through the surf to the men and teams on the beach, who would then land the rafts with these lines.

Most of these lines were begun this spring and more than 10,000 soldiers have been working throughout the summer. Logs are now coming over most of them while the rails are being laid on the others, and before the rains come all of them will be in operation. This rapid construction has been made possible only by the wonderful co-operation and the splendid morale of the soldiers and civilians who have gone at all their tasks determined to put them through, and keeping the one thought always in their minds that each tree felled means another airplane and that airplanes mean victory. Nearly 4,000 soldiers are working in this cut-up plant at Vancouver, Wash., and nearly 1,000,000 ft. b. m. of airplane spruce is being turned out each day by this mill.

But the war would not wait for us to build these railroads and open up these forests. It demanded immediate production and the greatest problem which Col. Brice P. Disque, commander of the Spruce Production Division, was called upon to solve was that of immediate production. He solved it promptly by putting soldiers into all the bodies of spruce which could be reached by motor trucks and began riving or splitting the immense spruce logs into cants which could be handled by these trucks and sawed with straight grain at the cut-up mill. It was this riving that kept production up, while the railroads were building and other methods of getting the logs to the mills were being worked out.

Convention of Railway Electrical Engineers

Discussion of Committee Reports Brings Out Interesting Practices of the Several Roads

THE TENTH ANNUAL CONVENTION of the Association of Railway Electrical Engineers, held at the Hotel La Salle, Chicago, Ill., October 29-31, 1918, was presided over by the president, C. J. Causland of the Pennsylvania Railroad. The meeting this year was essentially a war time convention. Practically every paper read was obviously prepared with our present national emergency in the minds of the committee. Wherever it had been found possible to effect economies the several committees had made a special effort clearly to present these practices to the members of the association. Although in point of numbers the actual attendance probably did not exceed that of former years to any great extent, the spirit of the convention and the lively interest taken in the discussions of the various reports combined to make the 1918 meeting one of the most successful of any ever held by the association. It is particularly significant that an unusual number of the senior active members of the association were present and that many of these attended the convention under instructions from their superior officers.

Electric Headlights

One of the activities with which the electrical department is largely concerned just now, and will be for several months to come, is the installation of electric headlights. While the practice of installing electric headlights and cab lights is in general the same on a majority of the roads, there exists quite a diversity of opinion concerning the details of such installation. The recommendations made by the committee were drawn up for the purpose of inviting discussion and were not made with a view of their being adopted as read. Some of the members seemed to think that cab wiring should be enclosed in conduit and were able to justify themselves in this position by citing specific instances of satisfactory service rendered from the use of conduit in their cab wiring. The use of the handrail for carrying wires from the cab forward to the headlight was also discussed and opinions seemed to differ considerably regarding the use of this rail as a conduit. The discussion concerning the details of electric headlight installation and operation consumed practically an entire morning session; the various opinions expressed indicate that considerably more experience with numerous details should be obtained before installation methods can be standardized in every respect.

Lighting

Another of the reports which drew much favorable comment was the one dealing with the subject of lighting of engine terminals and yards. New possibilities for lighting large outdoor areas have recently been brought about by the use of floodlights with high candlepower incandescent lamps. Certain localities can be effectively lighted with low intensities of illumination and it is to such cases that the flood light is well adapted. For lighting tracks or similar areas the best results are obtained by locating the flood lights at a height of about 60 to 75 ft. from the ground. By mounting the lights high in the air it has been found that any glare is done away with. Flood lighting lamps have been developed to such a degree of perfection that when they are properly located and mounted high enough it is quite possible to look directly toward such a unit from a distance without feeling any particular eyestrain or being momentarily blinded.

For lighting the roundhouse circles flood lights work out to advantage when they can be located high enough and far enough away to give a wide beam. In lighting the circles two things must be aimed at. First, a general illumination between the house and the turntables and, second, a more intense light at the ends of the turntables to enable the turntable operator and hostler to ascertain when the turntable is in the proper position.

Stationary Power Plants

In the report of the committee on the question of war time economy of stationary power plants, a number of very timely and important points were brought out. During the present

crisis, both national and international, the problem of obtaining equipment for the extension of old, and for the construction of new plants, has reached a point where attention must be diverted to the maintenance and operation of existing plants. Two great problems to be considered in the operation of power plants in the order of their importance, are continuity of service and maximum efficiency However, in striving for continuity of service, maximum efficiency must not be lost sight of. By maximum efficiency is not meant the highest possible efficiency of any one particular branch or unit, but the highest possible economy of the plant as a whole—the best and most economical service for the least expenditure of fuel, supplies and labor. This may mean that some one particular unit may be required to operate inefficiently within itself in order that maximum efficiency may be obtained from the plant as a whole. Operation and maintenance of the steam boilers is necessarily a most important feature. To secure the maximum efficiency from a steam boiler the heating surfaces must be kept clean. While it is entirely proper in some cases to use a boiler compound for the purpose of removing scale, it should be used only after a careful analysis of the feedwater has been made. Boiler compounds should not be used promiscuously as their indiscriminate use may lead to much trouble, and indeed in some cases, a complete shutdown. There is one scale remover that never fails when used with sufficient frequency and supervision, and that is the mechanical method, the use of a tube cleaner and scaling hammer.

Many steam generating plants operate an air compressor for the use of certain shop tools as well as for train line charging systems. Compressed air is one of the most expensive forms of energy used in railway shops and is usually the most neglected. Unlike steam or water an air leak cannot be seen and due to the fact that they are not unsightly, they are sometimes neglected. It should be remembered, however, that each cubic foot of air that is wasted is equal to approximately nine cubic feet of steam.

A great many shutdowns in the power plants are caused by hot-boxes and 99 per cent of these hot-boxes are due to negligence. It takes a bearing some little time to heat up to the danger point and if it is insisted on that the attendants feel the bearings at intervals of not over 20 minutes apart practically all of the hot-boxes will be avoided.

It was recommended by the committee that when installing new pipe lines fittings be avoided wherever possible. Fittings in small pipes, especially, should be entirely eliminated by the use of oxy-acetylene or electric welding.

On some roads the care of the power plant does not fall within the jurisdiction of the electrical engineer but not a few of the members present at the convention indicated that they were partially or wholly in charge of the stationary power plants. This would seem to be a logical placing of responsibility and it is believed that there will be an increasing tendency in this direction in the future.

Electric Arc Welding

The longest, most comprehensive, and perhaps the most valuable report of the entire convention was that of the committee on Electric Arc Welding. The three systems now in general use for metallic arc welding are as follows: 1, multiple operator system; 2, single operator system—stationary type; 3, single operator system—portable type. The multiple operator system is one in which more than one operator receives current for welding direct from the same machine which is centrally located in a shop or terminal. A control panel is provided for each operator, such as will enable current of different values to be obtained in any one circuit without interference from the other operators. The single operator stationary type system is one in which a separate machine is provided for each operator. As many of these machines are stationed at different points in the shops or terminals, as the demands require, each machine receiving its power direct from the shop power circuit. The single operator portable type system differs only from the single operator stationary system in that the machine is mounted on a truck in order that it may be moved from one point to another as the occasion requires, receiving its power from receptacles conveniently located about the shop or terminal.

The carbon arc process was the first method of welding metals with the electric arc and has been in use for more than 30 years. The advantages of the carbon arc, where it can be used, are greater speed and lower cost. The class of work to which this process is adapted includes building up operations, repairing broken parts, electric cutting, etc., but it is not suitable for work where strength is of first importance, such as boiler side sheets or locomotive frames.

The welding committee prepared an excellent description together with working drawings for such equipment accessories as are required by the welding operator. Of first importance in this list is the face shield. These are usually of either of two types. The more simple shield is arranged to be held in the left hand while operating the arc with the right, and consists simply of a tapered wooden box with suitable handle carrying the necessary protective glass. The helmet type of face shield is one which is slipped over the head and permits the freedom of both hands. Welding screens and welding booths are described in considerable detail.

A small sandblast outfit which has given good results was also recommended by the committee as being an essential device for clearing the dirt and oxide from the surfaces on which the welding is to take place. A suitable type of electrode holder which has been found satisfactory was also presented by the committee. In cases where portable welding outfits are used a cable reel has been found of decided advantage; working drawings from which this cable reel may be built are also included in the report.

Probably the most important feature of the entire welding report is the section dealing with definitions and symbols covering the different types of welds. Due to the fact that application of electric arc welding is progressing rapidly, it has become necessary for the Emergency Fleet Corporation and the United States Navy to adopt a standard form of nomenclature which has been perfected in part. It was suggested by the committee that the use of this nomenclature be made general with the hope that it may be extended to the entire industrial world.

Not only did the committee go into much detail concerning the latest practices of the art of electric arc welding, but it also presented a chart showing what it considered to be the proper welding organization for steam railroads.

During the discussion which followed the reading of the paper on arc welding, the question arose as to the length of time required for the training of a welding operator. Those who have had experience recently in breaking in new men for this work claim that, for certain classes of work where the operator repeated the same small operation continuously, it was possible to instruct an operator in a very brief period of time. To make a first class welding operator, however, capable of satisfactorily welding all classes of work, requires a much longer time, the instructions usually covering a period of several months.

Mr. Wanamaker of the Rock Island stated that in his opinion the subject of electric arc welding was far from a simple one. He said that for the last four years he had been devoting a great deal of his time to a study of this subject and that, while he had made satisfactory progress in accomplishing certain kinds of welding, he felt that he had still much to learn concerning this subject. Mr. Wanamaker emphasized clearly his belief that the proper person to place in charge of electric welding on the railroads is

the electrical engineer. In connection with this, however, he made it very plain that the subject of welding could not be treated superficially and that if success was to be obtained in a marked degree the most diligent study must be pursued by those in charge of the work.

Other Business

In addition to the more important reports previously cited four other papers were presented covering the following subjects: Conservation of Present Electrical Equipment; Train Ligting Equipment and Practices; Organization of the Electrical Department; Electrical Equipment of Ore and Coal Docks and the report of the Committee on Data and Information.

The election of officers for the ensuing year took place on Thursday afternoon. John E. Gardner, C. B. & Q., was elected president to succeed C. J. Causland. L. S. Billau, B. & O., was elected senior vice-president and L. C. Hensel, Frisco Lines, junior vice-president. Two new members were elected to serve on the executive committee—F. J. Hill, Michigan Central, and E. Lunn, Pullman Company.

The exhibits shown by the members of the Railway Electrical Supply Manufacturers Association were of more than ordinary interest.

On the evening of Thursday, the final day of the convention, a war dinner was tendered to the members of the Association of Railway Electrical Engineers by the members of the Railway Electrical Supply Manufacturers' Association. F. F. Skeel of the Crouse-Hinds Company, president of the R. E. S. M. A., acted in the capacity of toastmaster. A. J. Farrelly, Chicago & North Western, gave a brief and interesting outline of the growth of the Association of Railway Electrical Engineers. The growth and development of the Railway Electrical Supply Manufacturers Association was also humorously described by W. L. Bliss of the U. S. Light & Heat Corporation.

Doings of the United States Railroad Administration

Advances to Railroads Now Total $363,116,970 Not Including $58,433,628 Advanced to Equipment Builders

WASHINGTON, D. C.

THE RAILROAD ADMINISTRATION announced on November 1 that from April 1, 1918, to November 1, 1918, the director general has advanced to all railroads, exclusive of the current earnings of these lines applied directly by the individual roads to their current expenses and corporate needs, the sum of $363,116,970.

In addition to this payments have been advanced by the director general to the equipment builders on account of the standardized locomotives and freight cars, which have to be paid for by the companies, amounting to $58,433,628, making an aggregate of all advances during this seven months' period of $421,550,598. These advances were made to 100 railroad companies and systems.

The railroad systems to which the director general has advanced as much as $10,000,000 or more to November 1 are:

Pennsylvania Railroad Lines	$56,620,000
New York Central Lines	55,320,000
New York, New Haven & Hartford	50,000,000
Baltimore & Ohio	22,250,000
Chicago, Milwaukee & St. Paul	16,925,000
Illinois Central	15,475,000
Erie	12,900,000

These seven systems have received nearly two-thirds of all the money advanced thus far by the director general to all the roads.

For the month of October the total amount advanced to railroads, including advances made by the director general to the railroad corporations for corporate needs and to federal managers to provide for prior and present requirements, including back pay, old vouchers, improvements, betterments, etc., was $68,271,800. The advances during the month were made to 56 different lines, over one-half of the amount going to five systems as follows:

Pennsylvania Railroad Lines	$13,020,000
New York Central Lines	12,400,000
Baltimore & Ohio	5,750,000
Erie	2,000,000
Illinois Central	1,700,000

Of the total amount so disbursed to the railroads to November 1, 1918, $222,741,410 was taken from the $500,000,000 revolving fund, and $140,375,560 came from the surplus earnings of certain roads which had been turned over from time to time to the director general by particular roads whose receipts for the period exceeded their needs. The statement makes no separation as between the amounts loaned to railroads and the amounts paid on account of their compensation, nor between the advances to the federal managers and those to the corporations.

"Under the provisions of the law," the statement says, "the director general has authority to supervise or regulate the issuance of new securities by railroad corporations, and it has been the endeavor of the Railroad Administration to aid the railroad companies to obtain at reasonable and moderate interest rates the capital which they might need, either for new expenditures or for the extension or renewal of maturing obligations.

"The record shows that through the aid and intervention of the director general many hundreds of thousands of dollars of interest have been thus saved to the railroad corporations. The following instances will illustrate the results of the Railroad Administration's policy in this respect.

"The Baltimore & Ohio Railroad had an issue of $22,500,000 of notes maturing October 1. The company applied to the director general for assistance, stating that the best terms for renewal which it had been able to elicit were equivalent to 7¾ per cent per annum. As the notes were abundantly secured by high-class collateral, the director general informed the company that he regarded the interest rate proposed as excessive and that he could not consistently sanction it. The Division of Finance thereupon communicated, informally, with a number of banks which held the maturing notes, and upon receiving advice from the holders of approximately one-half in amount of the notes of their willingness to renew at 6 per cent per annum without commission, the director general advised the railroad company to offer an extension at 6 per cent to all the noteholders, with the understanding that the government would advance funds to pay off those holders not agreeing to renew. Holders of 80 per cent in amount of the maturing notes promptly renewed at 6 per cent per annum and the government advanced the Baltimore & Ohio company the funds to pay off the balance.

"The Chicago & Western Indiana Railroad Company told the director general that $15,000,000 of its notes would mature September 1, and that the best proposition from the bankers for renewal was equivalent to 9¾ per cent per

annum. The director general informed the corporation that he would not sanction renewal on such terms, but would approve a rate of not exceeding 7¼ per cent per annum, to include bankers' commissions. The railroad company has now been able, through its bankers, to arrange with over 80 per cent of the noteholders to renew on those terms, thus saving the company 2½ per cent per annum, or $375,000 in interest.

"The Chicago & North Western Railroad Company's issue of $5,000,000 of notes secured by high-class collateral, were maturing October 22, 1918, and the company asked the director general for aid or authority to renew at about 7½ or 8 per cent. As a result of the director general's intervention and the co-operation of the bankers, the notes were renewed at 6 per cent per annum, without commission.

"The Hocking Valley Railroad asked the director general for assistance to enable it to meet $5,000,000 of notes maturing November 1, 1918, stating that the company had been unable to secure the money with which to pay the notes at less than 7 per cent to 8 per cent. With the help of the director general the company has been enabled to renew a portion of the loan at 6 per cent per annum, while the government has agreed to advance to the company such funds as will be required to provide for any unrenewed portion at the rate of 6 per cent.

"These are a few illustrations of how the railroad administration has held down interest rates to railroad corporations in uncertain and difficult times.

"In other ways, also, the director general has held a restraining hand on money prices. On September 30, 1918, he issued a circular announcing that the rates of interest which depositary banks would be required to pay on railroad accounts after October 1, 1918, would be reduced from the higher rates which had previously prevailed to 2 per cent on demand deposits, and 3 per cent on time deposits, notice being given at the same time that banks designated as depositaries of railroad funds would be expected to limit their charges for money to their customers to the legal rates.

"It is gratifying to report that as a result of the active efforts of the Railroad Administration to maintain and protect the credit of railroad corporations, and to stabilize and keep to a moderate level the rates of interest which these companies may be required to pay, the interest rates on nearly all new railroad loans have been kept down to 6 per cent per annum, the uniform rate which the government itself has charged on all loans which it has made to railroad companies up to this time."

Seniority Rights of Employees in Military Service

Director General McAdoo has issued general order No. 51 giving the following instructions regarding the seniority rights of employees who have entered the military service:

The majority of railroads under federal control have already made announcement with respect to the preservation of seniority rights for employees who have entered the military service of the Army and Navy, and have indicated that so far as practicable, preference in re-employment or reinstatement would be given to soldiers and sailors when mustered out of the service.

(1) In order that as nearly as practicable there shall be a uniform treatment of this matter, the following general principles will govern:

(a) In the case of an employee having established seniority rights, so far as practicable, and where the employee is physically qualified, he will be restored to such seniority rights.

(b) In the case of employees who do not have seniority rights under existing practices, a consistent effort will be made to provide employment for them when mustered out of military service.

(2) Upon railroads where the assurances given on this subject have been more specific than the provisions of paragraph 1 hereof, such assurances shall be observed.

Repairs to Refrigerator Cars

The mechanical department in Circular No. 7 has issued the following instructions governing repairs to refrigerator cars:

In order to insure the greatest possible degree of efficiency in refrigeration and conservation of foodstuffs, refrigerator cars having trucks of 60,000 pounds capacity or over will, when receiving general repairs or being rebuilt, be made to conform to the following United States standard refrigerator car requirements:

No. 1. *General arrangements.*—The general arrangements of cars shall be as near as practicable to that as shown on blue print 1386, United States standard refrigerator car.

No. 2. *Ice boxes.*—Ice boxes shall be arranged in accordance with blue print 1389, United States standard refrigerator car design.

No. 3. *Hatch arrangement.*—Hatch arrangements shall conform and receive appliances as designed for United States standard refrigerator cars, as per blue prints as follows:

1390. Hatch arrangement.
1606. Hatch plug hinge.
1607. Hatch plug hinge strap.
1608. Hatch plug lifter guide.
1609. Hatch cover hinge.
1611. Hatch cover lever.
1613. Hatch plug lifter.
1614. Hatch hinge butt.
1615. Hatch cover lock lever guide.
1630. Hatch plug lift ring.
1653. Hatch cover lever anchor.
1731. Hatch hinge pin.

No 4. *Well trap.*—Well trap and well trap cone shall be arranged to conform with United States standard refrigerator car, as shown on blue prints—

1610. Well trap cone.
1616. Well trap.
1617. Well trap cover.

No. 5. *Drain pipe.*—Drain pipe shall be arranged in accordance with blue print 1604, United States standard refrigerator car.

No. 6. *Floor and walls.*—Floors and walls shall conform to blue print 1387, United States standard refrigerator car.

No. 7. *Floor racks.*—Floor racks shall conform to United Standard refrigerator car blue prints, as follows:

1644. Floor racks.
1724. Floor rack hinge plate.
1726. Floor rack hinge loop.
1727. Floor rack link holder.
1728. Floor rack pin bearing.
1729. Floor rack bearing.
1732. Floor rack hinge pin.

No. 8. *Doors, fastenings and cushions.*—Doors and attachments shall be arranged and receive appliances as designed for United States standard refrigerator cars, in accordance with the following blue prints:

1391. Door arrangement.
1623. Side door hinge.
1635. Locking rod guide.
1639. Door locking rod.
1649. Locking rod back plate.
1654. Side door locking rod socket.
1655. Side door locking rod socket.
1656. Side door step.
1657. Side door seal pin keeper.
1658. Side door seal pin.
1659. Side door lock arm.
1664. Seal hook and chain.
1675. Door open fastener.
1676. Clip for door open fastener.
1677. Link for door open fastener.
1730. Door hinge pin.

No. 9. *Van Dykes.*—Van Dykes of the above prints will be furnished each railroad upon making application to Frank McManamy, assistant director, Division of Operation.

No. 10. *Reports.*—Railroads will send blue prints of cars that do not meet the above specifications to the Mechanical Department, Division of Operation, Washington, D. C., with the following information:

(*a*) Number of cars owned that will need to be changed to meet the requirements.
(*b*) Estimated cost of making the changes.
(*c*) Location of shops where cars will receive such changes.
(*d*) Number of cars that can be changed monthly at each shop.
(*e*) Number of cars that can be changed in all shops per month.
(*f*) Length of time that it will require to make changes on all cars owned.

No. 11. *Special application of floor racks.*—(*a*) In order to improve refrigeration of cars as at present constructed, all railroads owning refrigerator cars will immediately arrange to apply floor racks in accordance with item No. 6, where they have not already been so equipped. It is desired to have all refrigerator cars requiring such racks

equipped within the next twelve months; therefore, there should be no delay in beginning this immediately.

(*b*) Monthly report will be furnished to the general supervisor of car repairs, Washington, D. C., showing the number of cars equipped with floor racks; those equipped with similar racks and the number remaining to be equipped.

The blue print numbers refer to the standard designs for refrigerator cars which have been prepared for some time, but from which orders have not yet been placed.

Taxation Questions

The proposal in Congress to combine war taxes and ordinary taxes in the pending revenue bill has brought about a complication affecting the division of taxes as between the Railroad Administration and the railroad companies. The federal control act provides that the corporations shall pay war taxes out of the amounts they receive from the Government as compensation, while ordinary taxes shall be paid by the Government while it is operating the properties. John Barton Payne, general counsel for the Railroad Administration, appeared before the Senate finance committee last week and urged a specific provision in the law to make certain the respective tax obligations by ear-marking a part of the proposed taxes as war taxes. Alfred P. Thom, counsel for the Railway Executives' Advisory Committee, presented a brief contending that the Government should pay any increase in taxation imposed during the period of federal control.

Railroad Administration Wants Its Share of Increased Express Rates

The Railroad Administration does not approve of the suggestion made by the Interstate Commerce Commission, which was originated by representatives of some of the state commissions, that the increase in revenues which the express company needs to pay increased wages be derived by reducing the proportion of express earnings payable to the Railroad Administration. In a statement commenting on the commission's opinion it says:

"The contract between the director general and the express company provides that the express company shall pay to the government for the express privileges accorded to it by the director general 50.25 per cent of the gross revenues from the express business. This percentage represents the average which has been paid for 10 years by the express companies to the railroads, and it is fair to assume that this percentage represents what is required for the performance of that part of the total service which has been performed by railroads in the past. Moreover, the heavy increases in operating costs on the railroads have necessitated substantial increases in freight and passenger rates averaging probably 25 per cent or more, and averaging in the case of many passenger rates as much as 50 per cent. In such circumstances it is clearly unwise to make an actual reduction in the basis of the government's compensation for the express privileges accorded to the express company for services on passenger trains. By the preservation of the present established basis of compensation for the express privileges, the increase in revenue of the Railroad Administration from the carrying of express business on passenger trains will be no greater than the increased revenue paid for transportation of passengers and their baggage, and such increase from the express business is just as appropriate and necessary as the increase from the passenger business.

"Another consideration of first importance is that the relatively low rates for transportation of express matter have had the effect of transferring to passenger trains the transportation, as express, of many articles and commodities which ought normally to go by freight. This tendency has been accentuated by the substantial increases recently made in freight rates. The result of this undue transfer of freight matter to passenger trains has been to congest and delay the passenger train service. The proposed increase in express rates will probably fall short of establishing a proper relation between express rates and freight rates, and certainly on this account no less increase in express rates than is proposed would be advisable.

"The entire amount of this increase which will inure to the express company is to be used for making necessary increases in wages of express employees. The portion of the increase which will inure to the Railroad Administration will be no more than is needed to provide for heavy increases in operating cost fairly chargeable to the express business."

It is not expected that the proposed increase in express rates can be made effective before January 1.

Forest Products Section to Distribute Creosote

The War Industries Board has issued a circular of regulations intended to set forth a definite working arrangement for the distribution of creosote due to the present shortage. The board and the Railroad Administration have felt the need of closer co-operation with the industry and it is expected that the arrangement will provide prompt deliveries to the government and war industries and in general relieve the situation with the least possible interference with existing trade conditions. Creosote has been placed on the clearance list and requirements of the army, navy and Emergency Fleet Corporation will be allotted by a section of the War Industries Board. With the approval of the priorities commissioner, producers are required to give preference, first, to direct orders of the army, navy and Emergency Fleet Corporation, and, second, to direct orders of railroads and of other transportation facilities under the direction of the Railroad Administration and to direct orders of telegraph and telephone companies under control of the post office department. Harbor commissions and war industries requiring creosote for use on direct government account will submit applications to the board.

The Railroad Administration has adopted a program of conservation and substitution of materials in the treating of ties, etc., which will undoubtedly result in a considerable saving of creosote. The Forest Products Section of the Central Advisory Purchasing Committee will receive the allotment for railway uses and will distribute it for all railway work and work under the direction of the Railroad Administration and when deemed necessary will divert shipments under contract from one road to another.

Traffic Conditions

The weekly report of traffic conditions made public by the Railroad Administration for the week ending October 26 continues to reflect the influence of the influenza epidemic in the reduction of passenger traffic and to some extent of freight movement, and in the Southern region the effect of the epidemic on trainmen has resulted in some local congestion in traffic and, consequently, embargoes. In the Southern region general changes in passenger schedules were made effective on October 20, some of the schedules being lengthened. In the Central Western region the Southern Pacific reports that a Liberty Loan Special operated through California, Arizona and Nevada, covered 4,781 miles and visited 145 towns, reaching 380,000 people. The Allegheny region reports arrangements made for the sale of through tickets between points on the Philadelphia & Reading and the Pennsylvania via Philadelphia. The war department reports a slightly increased amount of express traffic held at New York, the arrivals exceeding the unloading by about 500 cars. Some shortage of open top equipment is reported at Chicago, but taking the situation throughout the country, the transportation conditions are said to continue to be satisfactory. The navy department reports some congestion at the Boston and Washington navy yards, which is being given

attention. The export situation at practically all Atlantic and Gulf ports continues easy, although the deliveries to vessels show slight decrease under the arrivals. A heavy movement of cars and car parts to the French government is reported. The reports indicate that the table d'hote dining car service continues to meet with approval.

Rail Distribution

C. A. Morse, assistant director of the Division of Operation in charge of engineering and maintenance, is now giving close attention to the distribution of new rail. Because of the congestion in the steel mills, no new orders for rails have been placed this year and deliveries will be made on only about 1,400,000 tons of a total of 2,000,000 tons under previous contracts for 1918 rolling. Thus less than one-half of a normal year's requirements will be secured. Rollings have been at the rate of less than 25,000 tons per week for most of this year. Plans had recently been made to increase this to 35,000 to 40,000 tons weekly during November, but the receipt of orders for rails for our forces overseas has forced the mills to divert this extra tonnage there.

The orders now being rolled were placed two or three years ago. In general, they are well distributed among the roads of the country, although in some instances lines now badly in need of rails have none under contract. An attempt is being made to divert some of the rail to those lines on which it is most needed, the Detroit, Toledo & Ironton and the Grand Trunk Western being among the roads which are receiving rail diverted from the Erie and other roads. Approximately 65 per cent of the present output is now being given to the lines in the Eastern region, orders being largely concentrated on the roads in this and the Northwestern regions in order that they may get as much of this rail as possible into the track before winter. About December 1 it is expected that the mills will be turned on to orders for Southern roads where rail can be laid throughout the winter.

Ticket Plan for Dining Cars Tried Experimentally

The European plan of assigning seats in dining cars to passengers for a particular hour is being tried out experimentally on the Congressional Limited train between Washington and New York and also on a train between New York and Boston, in connection with the new table d'hote dining car service. The plan was put into effect on the Congressional Limited on November 1. This train northbound on that date consisted of 10 cars and two diners each seating 30, and 240 people were served with meals. There were four sittings, at 5:30, 6:15, 7:00 and 7:45 p. m. Stewards passed through the train before meal time and gave tickets to passengers assigning them to seats and giving the option of any one of the four periods for which seats were available. The dining cars are located in the middle of the train and two stewards passed through the train in opposite directions. It was found that the maximum time required to serve a meal was 35 minutes, leaving a maximum interval of 10 minutes to reset the table. Reports received indicate that the passengers readily accepted the idea, which prevents the necessity for standing in line to wait for meals, and may be extended to other trains of heavy travel if the plan continues to work out satisfactorily.

To Aid Shippers in Tracing

In order to accommodate shippers as far as possible in keeping in touch with their freight, B. L. Winchell, regional director of the Southern region, with the approval of the Railroad Administration, has adopted a plan in the Southern region which it is hoped will meet this situation. A central organization in Atlanta has been established which will maintain records of the interline car loads passing the Southern region border line gateways, as well as certain interior junction points. For instance, if a carload of freight from New York for Memphis is overdue at destination, the Memphis merchant to whom the shipment is consigned, can call up the Freight Service Bureau at Memphis for information as to the car's whereabouts, and communication with the central office of record at Atlanta ordinarily will develop the facts without delay. The local freight service bureau will be expected to show solicitude as to the transportation necessities of shippers.

Shippers Fear Another Rate Increase

The plan proposed by the Railroad Administration for establishing standard mileage scales of class rates is arousing much opposition on the part of shippers, according to reports reaching Washington, because of the number of instances in which the proposed standard scale rates exceed the rates now in effect. The Railroad Administration officials assert the plan is intended to bring about uniformity rather than to increase rates but many shippers assert that it represents a standardization upward that will result in a considerable increase in the long run and some profess to see in the plan an attempt to obtain the full amount of the increases contemplated in General Order No. 28, which provided for first raising the state rates to the interstate level before applying the 25 per cent increase. After many protests from state commissions, congressmen and shippers this plan was abandoned and the 25 per cent was applied to the existing rates.

Wage Board to Consider Express Wages

In addition to the duties heretofore conferred upon the Board of Railroad Wages and Working Conditions, Supplement No. 9 to General Order No. 27 provides that it shall be the duty of the board to hear and investigate matters presented by officers and employees of the American Railway Express Company or their representatives, affecting: (1) Inequalities as to wages and working conditions whether as to individual employees or classes of employees. (2) Conditions arising from competition with employees in other industries. (3) Rules and working conditions for the several classes of employees, either for the country as a whole or for different parts of the country.

The board in the performance of these duties shall, as in the case of railroad employees, be solely an advisory body and shall submit its recommendations to the director general for his determination.

Lubrication of Locomotives

Mechanical Department Circular No. 6 gives the following instructions regarding the lubrication of locomotives:

Investigation has developed that, in many instances, locomotives are not properly lubricated, which in addition to increasing coal consumption also causes excessive wear on cylinders, cylinder packing, valves and valve chambers, as well as on piston rod and valve stem packing.

It has been found that this is due on some roads to the practice of draining lubricators of all oil upon their arrival at the terminal and putting in the exact amount allowed for the trip before leaving. If excessive switching is necessary during the trip, or if any other unusual delays occur, or if the oil feed is not so regulated that it will last during the trip, the locomotive is often operated to the terminal with cylinders not lubricated. Cases are also found where on account of this practice yard engines are worked for hours without cylinder oil. This practice is extremely expensive.

Lubricators should be filled before locomotive leaves terminal, and sufficient oil should be carried on the locomotive to provide against any necessity for damaging cylinders, valves, packing or other parts of the machinery during the trip. Piston rod and valve stem packing should be properly lubricated, and a suitable swab provided to retain the oil.

Enginemen will be held responsible for the proper use of all lubricating oils furnished them.

Railroad Men Given Opportunity to Vote

Although some of the officers of the train service brotherhoods are understood to have told Director General McAdoo that his general order, requiring railroad men to abstain from political activity, was an infringement on their rights as citizens, Mr. McAdoo took no chances that they or anyone else should infer that he did not want them to exercise their right and privilege of voting at the critical election of last Tuesday. The director general on November 1 sent the following telegram to the regional directors:

"In accordance with usual practice and the laws and customs of the various states, please instruct all federal and general managers to give to railroad employees the largest possible opportunity without interfering with necessary railroad operations to exercise their right of suffrage on election day, November 5."

No Modification of Warranty Covenant

The attorney general has declined to grant the request of the Railroad Administration for a modification of the warranty convenant against commission agents in contracts with the government for supplies. The Railroad Administration had proposed a provision that the contingent fee clause would not apply to regularly established selling agencies established before the war. The refusal to modify was based on the fact that the clause is inserted in contracts with all government departments and was approved by the President and cabinet and no lesser authority should change it. The secretary of war had personally secured from the President an approval for waiver of the clause in certain cases approved by the war department board of contract review.

Henry Bartlett to Consider New Devices

Henry Bartlett, formerly chief mechanical engineer of the Boston & Maine and a member of the committee on standards for cars and locomotives of the mechanical department of the Railroad Administration, is to devote his attention especially to the examination and testing of new devices for the mechanical department in accordance with rules providing for the submission of new devices and inventions outlined in a circular issued by the division of operation in September. Mr. Bartlett has been giving attention to such matters for some time, but the lessening of the work on which he has been engaged in connection with the standard car designs will enable him to devote a larger proportion of his time to new devices.

Hearings on Increased Wages

Hearings were held this week at Washington before the Board of Wages and Working Conditions on the application of the brotherhoods of train service employees for further increases in wages, in addition to those granted them under General Order No. 27, by way of standardization to restore relations between the wages of various classes of employees which were somewhat disturbed by the order. They also have asked for time and one-half for overtime.

New Ticket Selling Plan Postponed

Because of the shortage of labor due to the influenza epidemic it has been found necessary to change from November 1 to December 1 the date for having railroad tickets and Pullman tickets sold at the same window. The adoption of the plan requires some alterations in ticket offices. The change, however, has already gone into effect at some offices.

Interesting Data on Rail Renewals

Some interesting information on rail renewals over a long period of years has been made public by the Committee on Economics of Railway Location of the American Railway Engineering Association in connection with a circular issued in Bulletin No. 210 of the association soliciting data on the effect of curvature on cost of maintenance of way and structures, etc. This table is submitted as illustrating what the committee desires in the way of data on the influence of curvature on rail renewals. The table is taken from a report of some investigations on the Pennsylvania Lines as presented by Robert Trimble, chief engineer of construction. It shows the number of renewals on all main tracks in 159 miles during a period of 31 years, for track on tangent and on various degrees of curvature.

Rail Renewals on Tangents and Curves on the Pittsburgh, Fort Wayne & Chicago, for all Main Tracks from Rochester to Crestline

Alinement	Average length of track	Length of track renewed in 31 years	No. of renewals in 31 years	Average life	Ratio of renewals (tangent being=to 1)
Tangent	1,037,633	2,988,561	2.88	10.76	1.00
Curve 0° to 1°.....	117,107	332,539	2.84	10.90	0.99
Curve 1° to 2°.....	157,323	510,289	3.24	9.57	1.12
Curve 2° to 3°.....	79,847	267,823	3.35	9.25	1.16
Curve 3° to 4°.....	46,382	186,291	4.01	7.73	1.39
Curve 4° to 5°.....	34,819	153,764	4.42	7.04	1.53
Curve 5° to 6°.....	4,580	24,146	5.27	5.90	1.82

Photo from Underwood & Underwood, N. Y.

Swiss Refugees from Russia Arriving on Native Soil

Volume of Traffic Again Shows Increase

THE RAILROADS in August continued to break the records set last year as to the volume of freight traffic handled, according to the monthly reports of the Operating Statistics Section of the Railroad Administration. The revenue ton miles increased 7.6 per cent over August, 1917, after the July report had shown an increase of 5.6 per cent, and for the eight months of the year ending August 31 the increase as compared with 1917 was 1.1 per cent. The increase in ton miles in August was handled with an increase of only .2 per cent in freight train miles and a decrease of 1.4 per cent in car miles. There was a slight increase in the number of locomotives and of cars in service and the average tonnage per train and per car was increased 6.6 and 8.3 per cent, respectively, but the percentage of empty car miles increased and the average mileage per car and per locomotive per day continued to show a decrease. The net result, however, was an increase in the ton mileage both per locomotive and per car per day. The figures are reported both by roads and by regions and as a consolidated total. The New England district shows an increase in revnue ton miles of 14.8 per cent and the Southern region an increase of 14.3 per cent. The figures are summarized as follows:

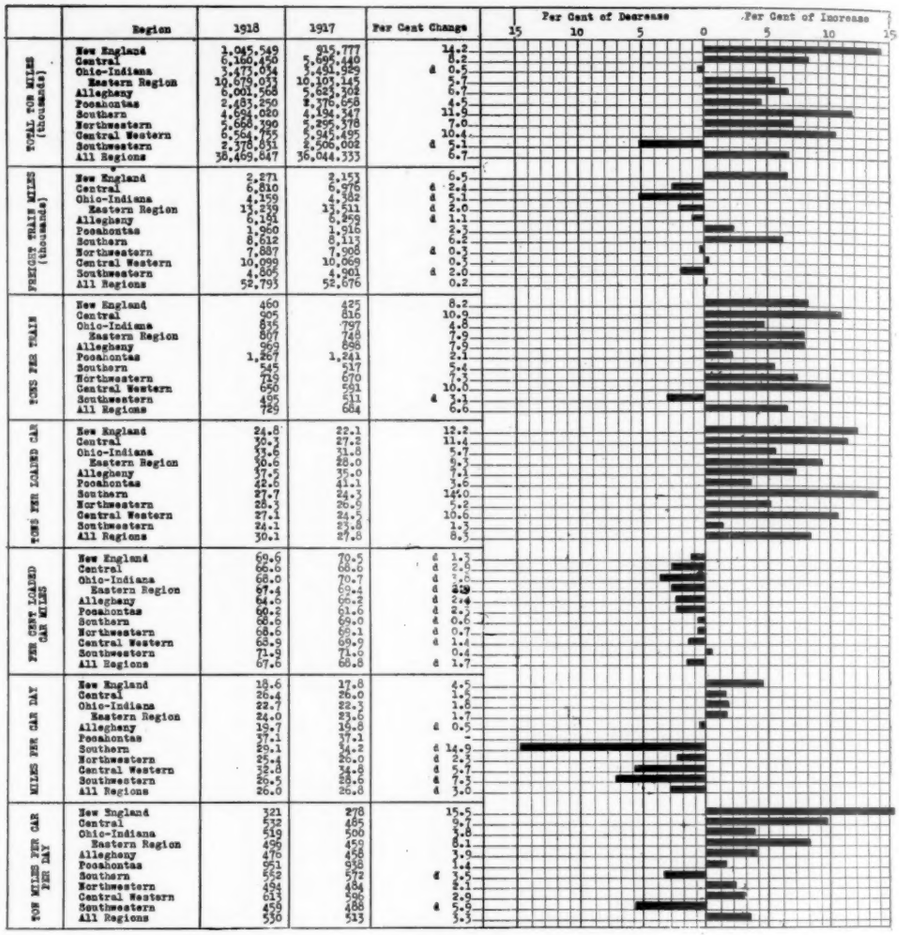


Illustration Redrawn from Similar Table Made by Operating Statistics Section

Percentages of Increase or Decrease in Factors Influencing Freight Train and Freight Car Efficiency in the Month of August, 1918, as Compared with the Month of August, 1917

TRAFFIC AND OPERATING CONDITIONS IN AUGUST

Item	Month of August 1918	Month of August 1917	Increase or decrease Amount	Increase or decrease Per cent	Eight months 1918	Eight months 1917	Increase or decrease Amount	Increase or decrease Per cent
Average miles operated—single track	220,418.00	220,125.22	292.78	0.1	227,500.99	227,199.28	301.71	0.1
Freight train miles	52,792,883	52,675,864	117,019	0.2	425,829,519	436,044,775	*10,215,256	*2.3
Loaded freight car miles	1,277,794,320	1,295,885,621	*18,091,301	*1.4	9,899,418,281	10,606,451,040	*707,032,759	*6.7
Empty freight car miles	612,299,738	588,761,682	23,538,056	4.0	4,642,821,267	4,579,607,630	63,213,637	1.4
Total freight car miles—loaded and empty	1,890,094,058	1,884,647,303	5,446,755	0.3	14,542,239,548	15,186,058,670	*643,819,122	*4.2
Freight locomotive miles	60,969,854	60,713,578	256,276	0.4	494,901,484	503,499,098	*8,597,614	*1.7
Revenue ton miles	35,660,217,405	33,136,229,870	2,523,987,535	7.6	262,655,500,995	259,774,408,817	2,881,092,178	1.1
Non-revenue ton miles	2,809,629,463	2,908,102,833	*98,473,370	*3.4	23,071,823,215	23,711,618,534	*639,795,319	*2.7
Total ton miles	38,469,846,868	36,044,332,703	2,425,514,165	6.7	285,727,324,210	283,486,027,351	2,241,296,859	0.8
Average number of freight locomotives in service	30,450	29,893	557	1.9	31,364	30,937	427	1.4
Average number of freight locomotives in or awaiting shop	4,549	4,191	358	8.5	4,670	4,465	205	4.6
Average number of freight cars in service	2,342,032	2,265,018	77,014	3.4	2,421,736	2,325,961	95,775	4.1
Average number of freight cars in or awaiting shop	155,472	136,915	18,557	13.6	136,041	131,979	4,062	3.1
Tons per train	729	684	45	6.6	671	650	21	3.2
Tons per loaded car	30.1	27.8	2.3	8.3	28.9	26.7	2.2	8.2
Average miles per locomotive per day	64.6	65.5	*0.9	*1.4	64.9	67.0	*2.1	*3.1
Average miles per car per day	26.0	26.8	*0.8	*3.0	24.7	26.9	*2.2	*8.2
Per cent of loaded car miles	67.6	68.8	*1.2	*1.7	68.1	69.8	*1.7	*2.4
Per cent of freight locomotives in or awaiting shop	14.9	14.0	0.9	6.4	14.9	14.4	0.5	3.5
Per cent of freight cars in or awaiting shop	6.6	6.0	0.6	10.0	5.6	5.7	*0.1	*1.8
Total ton miles:								
Per freight locomotive per day	40,754	38,896	1,858	4.8	37,491	37,710	*219	*0.6
Per freight car per day	530	513	17	3.3	486	502	*16	*3.2
Per mile of road per day	5,630	5,282	348	6.6	5,169	5,134	35	0.7

*Decrease.

Railroads Must Play Big Part in Conserving Timber

Natural Resources Must Be Conserved If We Are to Do Our Part in Reconstruction Period

By A. Gibson
Superintendent Timber Preservation and Tie Treating Plants, Northern Pacific, Brainerd, Minn.

IN NO WAY can the conservation of one of our most important natural resources be made more effective than by the railways treating all of their cross ties, bridge and other timbers (that can be treated) by a preservative that will extend their service at least 2½ times. There is no experiment about this; it is well known that cross ties and other timbers can be and are made to last very much longer by treatment.

We should not lose sight of the fact that during the years gone by we were drawing our tie and timber supply from virgin forests and the timber used was very high grade. We have now reached the period where second growth trees are being cut and young growth trees are much inferior to what we were getting 15 years and more ago. The result will be shorter life and in consequence a larger consumption.

The annual requirements for cross ties alone are appalling. We have about 290,000 miles of main tracks. Figuring 3,000 ties per mile this will require 870,000,000 cross ties; if the average annual life untreated is estimated at six years this means that main track renewals will require approximately 145,000,000 ties. It is also estimated that there are approximately 100,000 miles of passing tracks, yard tracks and spurs, on which about 2,800 ties per mile are used, a total of 280,000,000 ties. On a basis of six years' life untreated these tracks would require annual renewals of over 46,000,000 ties, making an approximate total of tie renewals for all tracks of 191,000,000. Changing these figures to board measure, and estimating main line ties at 38 ft. board measure per tie, they would represent 5,510,000,000, ft. board measure. Estimating yard, and passing track and spur track ties at 32 ft. board measure per tie, the requirements represent 1,472,000,000 ft. board measure, making a total for all tracks of 6,982,000,000 ft. board measure. This is only one item of the numerous drains on the forests by the railroads. In addition to this there are the demands for buildings of all kinds, bridges, wharves, docks and numerous structures in which large quantities of timber are used.

Assuming that the life of cross ties can be extended by the use of preservatives and proper tie plates to 15 years instead of 6, the requirements for main tracks would be reduced to 58,000,000 ties or 2,204,000,000 board feet, and for passing and other tracks to 20,000,000 ties or 597,000,000 ft. board measure annually, or a grand total of 78,000,000 ties or 2,801,000,000 board feet, making a total yearly saving of 113,000,000 ties or 4,181,000,000 ft. board measure for railroad cross ties alone.

SAVING PER TIE PER YEAR

Table showing economy in treating cross ties; with ties and creosote at prices indicated, on the basis of labor for placing in track at 25 cents per tie, 8 cents for handling and treating at tie plant and allowing 5 per cent for 15 years on treatment, including all labor and material at tie plant; assuming that treated ties will last 15 years and untreated 6 years.

Creosote per gal.	Cross ties at 40c	at 45c	at 50c	at 55c	at 60c	at 65c	at 70c	at 75c	at 80c	at 85c	at 90c	at 95c	at $1
$0.060	$0.0387	$0.0433	$0.0486	$0.0533	$0.0587	$0.0633	$0.0686	$0.0733	$0.0786	$0.0833	$0.0886	$0.0933	$0.0986
.065	.0370	.0423	.0476	.0520	.0573	.0620	.0673	.0720	.0773	.0820	.0873	.0920	.0973
.070	.0353	.0407	.0460	.0500	.0553	.0600	.0653	.0706	.0753	.0800	.0853	.0900	.0953
.075	.0340	.0393	.0443	.0486	.0540	.0586	.0640	.0686	.0733	.0786	.0840	.0886	.0940
.080	.0326	.0373	.0426	.0473	.0526	.0573	.0626	.0673	.0726	.0773	.0826	.0873	.0926
.085	.0313	.0356	.0410	.0456	.0510	.0556	.0610	.0656	.0710	.0753	.0807	.0860	.0900
.090	.0300	.0347	.0393	.0447	.0493	.0541	0600	.0646	.0693	.0746	.0793	.0846	.0893
.095	.0280	.0326	.0380	.0426	.0470	.0526	.0572	.0627	.0680	.0726	.0780	.0826	.0880
.100	.0267	.0313	.0366	.0413	.0466	.0513	.0566	.0613	.0666	.0713	.0766	.0813	.0866
.105	.0253	.0300	.0347	.0400	.0447	.0493	.0547	.0593	.0653	.0700	.0747	.0800	.0853
.110	.0240	.0286	.0333	.0386	.0433	.0480	.0533	.0580	.0633	.0680	.0733	.0780	.0833
.115	.0220	.0266	.0320	.0367	.0420	.0466	.0520	.0566	.0619	.0666	.0720	.0766	.0819
.120	.0206	.0253	.0306	.0353	.0406	.0453	.0506	.0553	.0606	.0653	.0706	.0753	.0806
.125	.0193	.0240	.0293	.0339	.0393	.0439	.0493	.0539	.0593	.0639	.0693	.0739	.0793
.130	.0180	.0230	.0280	.0326	.0380	.0426	.0480	.0526	.0580	.0626	.0680	.0726	.0780
.135	.0167	.0210	.0260	.0310	.0366	.0413	.0466	.0513	.0566	.0613	.0666	.0713	.0766
.140	.0153	.0200	.0253	.0300	.0353	.0400	.0453	.0500	.0553	.0600	.0653	.0700	.0753
.145	.0140	.0183	.0233	.0283	.0333	.0383	.0436	.0483	.0533	.0583	.0633	.0683	.0733
.150	.0120	.0166	.0220	.0266	.0320	.0366	.0420	.0466	.0520	.0566	.0620	.0666	.0720
.155	.0107	.0157	.0207	.0256	.0306	.0357	.0406	.0457	.0506	.0557	.0606	.0656	.0706
.160	.0093	.0140	.0193	.0240	.0293	.0340	.0393	.0440	.0493	.0540	.0593	.0640	.0693
.165	.....	.0126	.0176	.0226	.0276	.0326	.0373	.0426	.0473	.0520	.0573	.0626	.0673
.170	.....	.0106	.0160	.0206	.0260	.0306	.0360	.0406	.0460	.0506	.0560	.0606	.0660
.175	.....	.....	.0146	.0193	.0246	.0293	.0346	.0393	.0446	.0493	.0546	.0593	.0646
.180	.....	.....	.0133	.0180	.0233	.0280	.0333	.0380	.0433	.0480	.0533	.0580	.0633
.185	.....	.....	.0116	.0163	.0213	.0263	.0313	.0363	.0413	.0463	.0513	.0563	.0613
.190	.....	.....	.0100	.0146	.0200	.0246	.0300	.0346	.0400	.0446	.0500	.0546	.0600
.195	.....	.....	.....	.0133	.0186	.0233	0286	.0333	.0386	.0433	.0486	.0533	.0586
.200	.....	.....	.....	.0120	.0173	.0220	.0273	.0320	.0373	.0420	.0473	.0520	.0573
.205	.....	.....	.....	.....	.0160	.0206	.0260	.0306	.0360	.0406	.0460	.0506	.0560
.210	.....	.....	.....	.....	.0146	.0193	.0246	.0293	.0346	.0393	.0446	.0493	.0546
.215	.....	.....	.....	.....	.0133	.0180	.0230	.0279	.0330	.0379	.0433	.0479	.0533
.220	.....	.....	.....	.....	.0120	.0166	.0220	.0266	.0320	.0366	.0420	.0466	.0520
.225	.....	.....	.....	.....	.....	.0153	.0203	.0253	.0303	.0353	.0403	.0453	.0503
.230	.....	.....	.....	.....	.....	.0133	.0186	.0233	.0286	.0333	.0386	.0433	.0486
235	.....	.....	.....	.....	.....	.....	.0173	.0220	.0273	.0320	.0373	.0420	.0473
.240	.....	.....	.....	.....	.....	.....	.0160	.0206	.0260	.0306	.0360	.0406	.0460
.245	.....	.....	.....	.....	.....	.....	.0143	.0190	.0243	.0290	.0343	.0390	.0443
.250	.....	.....	.....	.....	.....	.....	.0126	.0173	.0226	.0273	.0326	.0373	.0426

BASIS ON WHICH ABOVE TABLE IS PREPARED

UNTREATED

2½ Cross ties	at 50c each	= $1.25
2½ Placing	at 25c each	= .63
		$1.88
Untreated		= $1.88
Treated		= 1.33
		$0.55

TREATED

1 Cross tie	at 50c	= $0.50
1 Placing	at 25c	= .25
2½ Gal. creosote	at 10c	= $0.25
Tie plant expense	at 8c	= .08
		.33
Interest at 5 per cent per annum on 33c—15 years		.25
		$1.33

Total saving $0.55 ÷ 15 = $0.0366 per tie per year.

The treating of cross ties with preservatives is not only a move in the interest of conservation, but it is economical for the users, as the table on the preceding page shows. It is prepared from experience in the treatment and use of Minnesota, Wisconsin, Montana, Idaho and Washington timber in railroad tracks in those states.

There are various other items of expense in connection with tie renewals which are not taken into account in this table, and which cannot very well be shown, owing to variable conditions. The originating points from which ties are shipped to the treating plants are different for almost every shipment, the more frequent disturbance of the roadbed for untreated ties, more especially when traffic and labor conditions are abnormal and the additional hauling and handling are typical. Therefore, if the table errs in any way it is in favoring untreated ties. With present processes of treatment large quantities of inferior species of timber, not suitable for general use in buildings or for ties untreated, can be used, such as birch, ash, elm, cottonwood, red oak and jack pine; timbers that will not last to exceed three years without treatment before decay will render them unsafe.

In the fall of 1907 and summer of 1908 the Northern Pacific treated quite a large number of cross ties of the above species (approximately 600,000) at Brainerd, Minn., with creosote oil and placed them in main line and branch tracks. They are giving very good service. To all appearances the red oak, birch, elm, cottonwood and jack pine will last for many years yet. The only sign of failing is caused by mechanical wear and splitting in some instances, but the general results are good. A large number of ties of these species have been used on this road each year since 1907. Red oak, birch and elm are much superior to our best grades such as tamarack or fir for tie timber when treated with creosote owing to their susceptibility to treatment, resistance to mechanical wear and spike-holding qualities. Tamarack and fir are our most refractory timber to treat, but they can be and are treated successfully, although in a few years the supply will have to come from Montana and west of there, as the eastern forests are beginning to show marked signs of depletion in what was considered an inexhaustible supply about 25 or 30 years ago.

When a member of an engineering party on preliminary and location surveys in 1884, I made the trip on foot from South Prairie, Washington, the eastern end of the Northern Pacific line from Puget Sound at that time to what is now Lester, thence up Camp Creek to the west end of the Stampede Pass tunnel, and in all that territory we found no signs of timber being cut except a few small trees for building settlers' cabins. For the entire distance from South Prairie to the summit of the Cascades on the west slope there was one magnificent virgin forest as far as the eye could reach. It was the accepted opinion that Washington had timber to supply the United States for hundreds of years to come. Today the best timber is all cut off except in a few gulches and inaccessible spots where spur tracks are now built so that logging can be carried on economically.

In the winter of 1885 I made the trip by stage, buckboard and on foot from North Yakima, Wash., the west end of the Northern Pacific from St. Paul at that time, to the east end of the Stampede Pass tunnel and found the same forest conditions existing as on the west slope; an unbroken stretch of magnificent forest from Teanaway to the summit of the Cascades and down the west slope to Tacoma and Seattle.

The large stumps are the only remaining evidence today of the grand trees that fell in the terrible slaughter. There are still quite large patches of birch, ash, elm, cottonwood and some red oak in Minnesota and Wisconsin and smaller patches of cottonwood and elm along the streams from Lake Superior to Puget Sound that can be utilized for tie timber, if treated, and which if not used in this or some other similar way will rot on the ground in a few years and be a loss to the country.

Unless all signs fail our country is going to develop very rapidly after we have won this war. Our population will also increase, which will naturally demand a large extension of our present railroad mileage, and this with the demand for materials from foreign countries will tax our ability to the utmost to meet requirements. Therefore, the more we conserve our present natural resources the better prepared will we be to furnish the balance of the world with the necessities it may need, and timber will be one of the most important items. During the present war the supply of creosote in this country and from abroad has been reduced so that present prices make its use almost prohibitive, but undoubtedly this will be adjusted when the war is over and tank vessels are again available for ocean traffic.

Train Accidents in August[1]

THE FOLLOWING IS A LIST of the most notable train accidents that occurred on the railways of the United States in the month of August, 1918:

Collisions

Date	Road	Place	Kind of Accident	Kind of Train	Kil'd	Inj'd
2.	Pennsylvania	Walker's Mill, Pa.	rc	F. & F.	3	0
7.	N. Y., N. H. & H.	Westbrook	rc	F. & F.	2	0
30.	Louisville & N.	Nortonville	bc	F. & F.	1	3

Derailments

Date	Road	Place	Cause of Derailment	Kind of Train	Kil'd	Inj'd
1.	Pennsylvania	Terre Haute	unx	P.	1	30
7.	Denver & R. G.	Blanca	b. rail	P.	0	9
10.	Miss. Central	So. Hattiesburg	malice	P.	2	0
13.	Pennsylvania	Protection	unx	P.	0	6
19.	Balt. & Ohio	Newburg, W.Va.	acc.obst.	P.	3	0
19.	N. Y. Central	Bergen, N. Y.	reg.	P.	0	15
28.	Norfolk & W.	Ada, W. Va.	exc. speed	P.	2	14

The trains in collision on the Pennsylvania Lines near Walker's Mill, Pa., on the second were eastbound freights. The leading train, with a locomotive at the rear, was at a standstill, and was about 200 ft. in advance of an automatic block signal set against the following train. This train, which, it appears, had passed an automatic block signal indicating caution, came on at about 35 miles an hour; and its engineman, fireman, and one brakeman were killed. This collision occurred at 4:40 a. m.

The trains in collision on the New York, New Haven & Hartford near Westbrook, Conn., on the night of the seventh were eastbound freights. The locomotive of the second train was overturned and ten cars were wrecked. The engineman and fireman were killed. The men on the engine having been killed it is not known why the speed of the train was not controlled; but the collision occurred during a severe electrical storm, accompanied by rain and hail, and it is believed that these men were either shocked or killed by lightning just prior to the collision.

The trains in collision near Nortonville, Ky., on the 30th were through freight trains. The collision occurred in a cut, and both engines and seven cars were wrecked. The track was blocked about twelve hours. The engineman of the northbound train was killed, and the southbound engineman was injured. The collision was due to oversight on the part of the train despatcher. After issuing a meeting order he put another train on the schedule of one of the trains without giving a copy of the meeting order to the new section.

The train derailed at Fruitridge Avenue, Terre Haute,

[1]Abbreviations and marks used in Accident List:
rc, Rear collision——bc, Butting collision——xc, Other collisions——b, Broken——d, Defective——unf. Unforeseen obstruction——unx, Unexplained——derail, Open derailing switch——ms, Misplaced switch——acc. obst., Accidental obstruction——malice, Malicious obstruction of track, etc. ——boiler, Explosion of locomotive on road——fire, Cars burned while running——P. or Pass., Passenger train——F. or Ft., Freight train (including empty engines. work trains, etc.)——Asterisk, Wreck wholly or partly destroyed by fire——Dagger, One or more passengers killed.

Ind., on the first was westbound passenger No. 21. One mail clerk was killed; three mail clerks, three employees and 24 passengers were injured, all of the injuries being classed as slight. The train was running at about 60 miles an hour. The cause of the derailment was not determined. The track was found in good condition. Eye-witnesses thought there must have been some obstruction on the rail.

The train derailed near Blanca, Colo., on the seventh was a westbound passenger. Four coaches were overturned and eleven passengers were slightly injured. The cause of the derailment was a broken rail.

The train derailed on the Mississippi Central at South Hattiesburg, Miss., on the 10th was a westbound passenger. The engine was overturned at a maliciously misplaced switch and the track was blocked about 10 hours. The engineman and the fireman were killed.

The train derailed near Protection, N. Y., on the night of the 13th was eastbound passenger No. 576. The engine and three cars were overturned and fell down a bank. Six passengers were injured. The derailment occurred at a frog, but whether or not this frog was defective or broken and was the cause of the derailment, or was broken in consequence of the derailment, could not be determined.

The train derailed on the Baltimore & Ohio near Newburg, W. Va., on the night of the 19th of August was westbound passenger No. 47, moving up grade, drawn by two engines. The leading engine was overturned and the engineman, fireman and one trainman were killed. It is believed that the track was disturbed by something dragging from a car in a preceding train.

The train derailed near Bergen, N. Y., on the afternoon of the 19th was eastbound passenger No. 28. It consisted of one express car, two mail cars, one baggage car and four coaches. The engine and all cars except the rear coach were partly tipped over on the south side of the track. The train was running at high speed, but the number of persons injured (all passengers) is given as only fifteen. Trackmen were working at this point, and it appears that the rails were not properly alined when the train came on.

The train derailed near Ada, West Virginia, on the 28th was eastbound passenger No. 4. The engine and four cars were overturned, the engineman and fireman were killed, and nine passengers and five employees and mail clerks were injured. The cause of the derailment was presumed to be too high rate of speed around a curve of eleven degrees on a steep descending grade, no defects being found in track or equipment.

Electric Car Accidents.—In Chicago on the 7th, when a freight train ran into a street car, five persons were killed and 27 injured; at Anderson, Ind., on the 30th, in the derailment of an electric car, one person was killed and 5 injured. At Cleveland, Ohio, on the 7th, an electric car, thrown off the track by running into a heavy truck, fell off a high bridge; eight passengers injured.

Final Liberty Loan Totals Reach $184,868,300

Railroad Men's Subscriptions $78,000,000 Over Third Loan. Complete Returns for Eastern Region

THE FINAL REPORTS to Director General McAdoo show that the railroad men of the United States subscribed for a total of $184,868,300 in Fourth Liberty Loan bonds. This compares with $106,655,450 subscribed in the third loan, an increase of $78,212,850.

A tabulation of subscriptions by regions shows that the honors for the campaign belong to the Southwestern region, 99.1 per cent of the 170,333 employees of that region having subscribed for a total of $21,487,650, an average of $126 per subscriber. The Eastern region, the largest of the seven, naturally led in the total subscribed with $54,697,200, but its percentage of employees subscribing and the average subscription were not as high as in the Southwestern region. The Railroad Administration headquarters in Washington led all the regions, all of the 1,014 employed there subscribing an average of $495.10 each.

The totals in detail follow:

Region	Number subscribers	Percentage employees	Amount subscriptions	Amount per subscriber
Administration Headquarters (Wash.)	1,014	100.	$502,000	$495.10
Eastern	532,173	96.	54,697,200	102.00
Southwestern	170,333	99.1	21,487,650	126.00
Central Western	307,546	96.69	36,082,850	120.58
Pocahontas	48,954	87.23	4,380,550	89.48
Southern	184,035	78.	16,253,200	88.00
Allegheny	291,985	94.86	23,611,100	80.86
Northwestern	248,165	97.92	27,853,750	112.24

Eastern Liberty Loan Totals

Final returns of subscriptions to the Fourth Liberty Loan by officers and employees of the 48 railroads comprising the Eastern Region reported to Regional Director A. H. Smith, Grand Central Terminal, show that 98 per cent of all employees subscribed, the average amount per subscription being $102.00. The total subscription was $54,555,200, made by a total of 551,944 employees.

The officers and clerks of the regional director's staff subscribed $113,250 additional.

Twelve of the roads show that 100 per cent of all employees subscribed, namely, the New York Central, Brooklyn Eastern District Terminal, Buffalo Creek, the Delaware, Lackawanna & Western, the Grand Rapids and Indiana, the Lehigh & Hudson River, the Lehigh & New England, the Lehigh Valley, the Pittsburgh & Shawmut, the Susquehanna & New York, the Toledo, St. Louis & Western, and the Wheeling & Lake Erie. In addition to this 24 railroads show between 90 and 100 per cent of all employees subscribed. The Lehigh & Hudson River led all other roads in the Eastern Region in the average amount per subscription of $150.00, the Grand Rapids and Indiana ranking second with $146.00, the Wheeling & Lake Erie third with $141.00, and the Buffalo, Rochester & Pittsburgh, and Central Indiana, fourth and fifth, with $124.00 and $123.00, respectively.

The New York Central, both east and west, showed 92,586 employees, or 100 per cent subscribed, the average amount per subscription being $106.95. The division East and West is as follows:

	Number of employes	Number subscribed	Percentage subscribed	Amount subscribed	Average amount subscribed
East of Buffalo—	59,903	59,903	100	$6,334,050	105.75
West of Buffalo—	32,683	32,683	100	3,568,400	109.15

The New York Central total of subscriptions is $9,902,450, which is the largest amount subscribed by any individual road in the Eastern Region.

The Pennsylvania Lines West showed 95 per cent of all employees subscribed, the average amount per subscription being $110.00. The total subscription was $8,735,800, made by a total of 82,990 employees.

The office of the regional director has made a detailed tabulation showing how the bonds were taken by classes of employees on the 48 railroads in the Eastern region. The figures, with the exception of the average subscription per subscriber are copied from the tabulation.

	Number in service	Number subscribed	Per cent	Amount subscribed	Average subscribed
Officers and general office employees	37,065	36,463	98	$6,363,300	$174.51
Agents and station employees	86,011	82,482	95	7,237,000	87.76
Engineers	23,724	22,977	97	2,732,650	118.49
Firemen	23,619	22,096	93	1,740,300	78.76
Conductors	19,354	18,612	96	2,175,650	116.88
Other trainmen	48,552	46,075	95	3,881,950	84.25
Mechanical department	154,295	150,331	97	17,604,850	117.11
Roadway department	107,882	99,598	98	7,647,750	76.88
Miscellaneous employees	51,442	49,069	95	4,720,250	96.19

Inasmuch as these totals are probably typical of all the regions it is worth noting that the office employees made the best record, 98 per cent of the total number subscribing for an average of $174.51. The enginemen were second, 97 per cent of their number in the Eastern region having subscribed for an average of $118.49, the mechanical department employees a close third with 97 per cent, and an average subscription of $117.11, while the conductors were close behind with 96 per cent and an average subscription of $116.88.

FOURTH LIBERTY LOAN TOTALS FOR EASTERN REGION

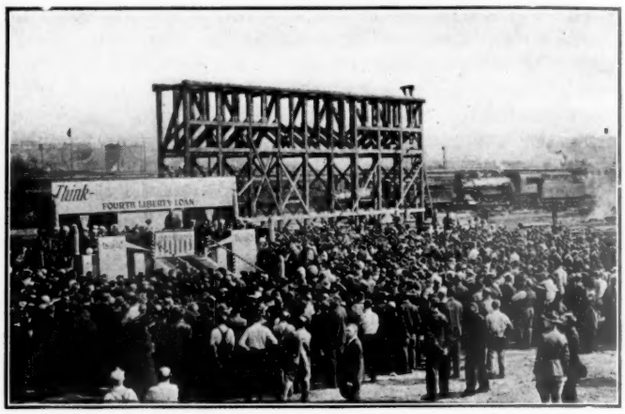
	Total amount of subscriptions	Total number of employees	Total number subscribing	Average amount per subscription	Percentage employees subscribed
Ann Arbor	$134,550	1,363	1,355	99	99
Balt. & Ohio, West	2,569,700	29,150	28,908	88	99
Bangor & Aroostook	182,550	1,925	1,723	106	89
Boston & Albany	506,450	8,468	7,611	72	83
Boston & Maine	2,564,550	31,532	30,051	85	95
Brooklyn, East. Dist. Term.	42,550	438	438	97	100
Buffalo Creek	21,050	204	204	103	100
Buff. Roch. & Pitts.	924,850	7,567	7,463	124	98
Central Indiana	28,200	247	228	123	92
Central Vermont	217,800	2,656	2,395	90	90
Ches. & Ohio of Ind.	147,750	1,616	1,435	103	89
Chic. Ind. & Lou.	369,400	4,172	4,042	1	96
Cin. Ind. & West	188,900	1,683	1,598	118	94
Clev. Cin., Chic. & St. L.	2,736,000	25,106	24,492	111	97
Det., Bay City & West.	5,600	161	96	58	60
Detroit Terminal	23,050	219	218	106	99
Detroit Tel. & Iron	159,250	1,842	1,542	97	81
Detroit & Mackinac	66,150	735	695	95	95
Delaware & Hudson	1,747,800	15,701	14,913	117	95
Delaware, Lack. & West.	2,533,650	22,162	22,162	114	100
Erie	4,346,900	45,263	43,375	100	95
Grand Rapids & Ind.	429,000	2,923	2,923	146	100
Grand Trunk, New Eng.	152,900	1,391	1,205	127	87
Grand Trunk, West.	645,550	10,028	8,578	75	85
Hocking Valley	363,750	5,169	3,924	92	75
Indianapolis Union	62,350	867	756	82	87
Lake Erie & West.	383,300	3,823	3,657	104	95
Lehigh & Hudson River	114,100	756	756	150	100
Lehigh & New Eng.	131,900	1,295	1,295	102	100
Lehigh Valley	2,944,150	25,053	25,053	117	100
Maine Central	618,200	7,907	7,098	87	89
Manistique & L. Sup.	5,250	100	77	68	77
Michigan Central	1,706,750	18,896	18,295	93	96
New York Central, East.	6,334,050	59,903	59,903	105	100
New York Central, West.	3,568,400	32,683	32,683	109	100
N. Y. Chic. & St. Louis	795,550	7,681	7,424	107	96
N. Y., N. H. & Hart.	3,167,700	43,953	42,391	75	96
N. Y., Ontario & West.	548,450	5,024	4,740	106	94
Pennsylvania Lines, West.	8,735,800	82,990	79,032	110	95
Pere Marquette	882,950	10,271	9,158	96	89
Pitts. & Shawmut	75,700	611	611	122	100
Rutland	261,500	2,189	2,177	120	99
Susquehanna & N. Y.	17,500	160	160	109	100
Toledo & Ohio Cent.	641,600	6,742	6,475	99	96
Tol., St. Louis & West.	408,050	3,316	3,316	123	100
Toledo Terminal	26,650	360	345	77	96
Ulster & Delaware	63,050	582	537	117	92
Wabash	1,141,000	9,266	9,262	123	99
Wheeling & Lake Erie	813,350	5,745	5,745	141	100
Total	54,555,200	551,944	531,920	102	96

Regional organization, 253 employees (100 per cent subscribed)	$113,250
Local sub-committee subscriptions through the A. R. A.	28,750
Grand total	$54,697,200

St. Louis Roads Make Liberty Loan Record

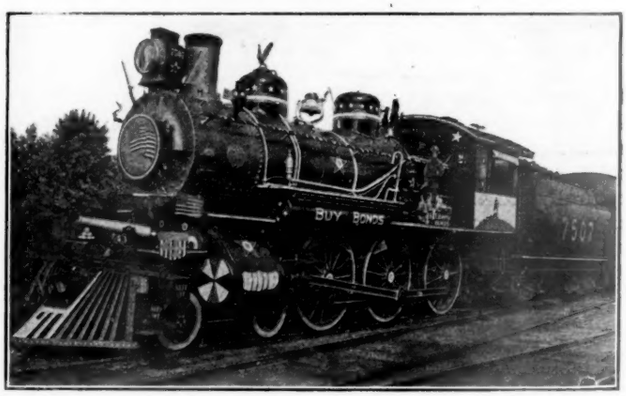
Every one of the 40,889 employees of the Missouri Pacific, the St. Louis Southwestern, the Louisiana & Arkansas, and the Southern Illinois & Missouri Bridge, which comprise the lines under the jurisdiction of A. Robertson, federal manager, subscribed to the fourth Liberty Loan. The total of the bonds taken on these railways was $6,665,500, or an average of $163 per employee. The 35,520 Missouri Pacific employees alone subscribed a total of $5,864,050, or $165 per employee. The lines under Mr. Robertson rank high if not the highest among the federal managers' districts as to average subscription per person.

This commendable record was only achieved after a most vigorous Liberty Loan campaign. To give impetus to the campaign a meeting of 1,000 delegates representing the employees of the lines was held at Planters Hotel, St. Louis, on September 14. Among those who addressed this assembly were A. Robertson, federal manager; B. F. Bush, South-



Loan Meeting at Ewing Avenue Yard, St. Louis

western regional director; E. J. White, general solicitor of the lines under Mr. Robertson; J. F. Murphy, general manager of the Missouri Pacific, John Moran, general chairman of the Brotherhood of Locomotive Engineers, Daniel Upthegrove, general attorney of the St. Louis Southwestern; S. L. Watts, general chairman of the Brotherhood of Railway Carmen of America and a number of other representative officers and employees and officials of the various labor organizations. Following the meeting at the Planters Hotel, the federal manager, in company with the general chairmen of



The Locomotive Which Handled the Liberty Loan Special

various labor unions as well as railway officers and employees, made a tour of his district holding meetings at stations, roundhouses, shops, churches, opera houses, which were attended by all employees who could possibly be spared from their work. The crowds were uniformly large and enthusiastic. The photographs show the locomotive which handled the Liberty Loan Special and a typical meeting which was held at Ewing Avenue yard, St. Louis. It will be noted that considerable ingenuity was displayed in decorating the engine. The stars and stripes are in evidence on various parts of the locomotive, President Wilson's photograph has a prominent position in the headlight, the Ameri-

can eagle is mounted on the sand dome and a miniature cannon on the pilot.

As previously mentioned, the total subscription of the Missouri Pacific was $5,864,050, or an average of $165 per employee. The totals and averages for the other three lines were $710,300 and $151 on the St. Louis Southwestern, a total of $86,650 and an average of $136 for the Louisiana & Arkansas, and a total of $4,500 and an average of $115 on the Southern Illinois & Missouri Bridge.

Mechanical employees subscribed more heavily than any other class of employees on these lines. The total of their subscriptions amounted to $1,862,550. Roadway employees were next with a total of $1,474,800 and officers and general office employees were third with $867,300.

Signals Required to Facilitate Traffic in Australia

Automatics Prove Profitable on Lines Operating Under the British Board of Trade Standards

By C. B. Byles

Signal Engineer, New South Wales Government Railways, Sydney, N. S. W.

CONSIDERABLE PROGRESS HAS BEEN MADE in recent years in the installation of automatic signaling on the New South Wales Railways. This system consists of 4,677 route miles, of which 4,102 are single, and the balance consists of two or more tracks. Three trunk lines radiate from Sydney, south, west and north, respectively. These lines are double for distances varying from 100 to 200 miles from the metropolis, and beyond that the whole of the mileage is single. The three trunk lines referred to carry a fairly heavy passenger and freight traffic, comprising interstate expresses, mail trains and trains of less importance. The speed, however, at which even express and mail trains are operated is relatively low, owing to the exceedingly heavy nature of the country through which they pass. The remainder of the system consists of an extensive mileage of single track branch lines, and over these the traffic is, for the most part, very light. Within the suburban area of Sydney, extending to a radius of about 20 miles, a dense residential traffic is dealt with and the train service provided compares in density with that in the suburban areas of most of the principal cities of the world.

It should be remembered, in considering the conditions under which the traffic is handled in New South Wales, that the British Board of Trade standards in respect of safe working are adhered to. Thus, many practices which are permissible under somewhat similar physical conditions in the United States are not allowable in New South Wales. The larger part of the system is interlocked, and the ideal aimed at is the complete interlocking of the whole system. It is considered necessary, as a rule, for an officer to be in attendance at all places where main line switching movements take place, and the practice which prevails in the United States of permitting a train crew to side track a main line train for a more important one to pass is unknown here. At places where the attendance of a traffic officer is necessary for switching purposes or for station attendance, he is required also to operate the signals and to manipulate the block telegraph system or other system of working in operation. It thus comes about that, at stations where the conditions in other respects call for the employment of an officer, very little is gained by installing automatic signals, and hitherto, under such circumstances, the manual block system, operated under suitable safeguards, has been considered sufficient to meet the requirements.

The single line portions of the system are, for the most part, worked by means of the electric tablet or electric staff systems, only a comparatively small mileage being worked by means of ordinary train staff and ticket. No attempt has been made to introduce automatic signaling on single lines, and it is difficult to see at present how this could be done, in view of the fact that the possession of a token as authority for passing over a single line has always been regarded as an indispensable feature of safe working. The introduction of automatic signaling on single track lines and the disuse of the token would introduce a variance of practice and, in view of the dependence upon a fixed habit on which the use of the token system relies for its efficacy, very serious considerations would arise in connection with any scheme involving an exception to this hitherto invariable rule.

From what has been written, it will be clear, therefore, that the scope for automatic signaling is confined to:

(a) The country stretches of double track lines on the three trunk systems.

(b) The suburban areas.

Taking first the country lines, the use of automatic signaling is not found to be justified in cases where traffic attendance is necessary for purposes apart from signaling. There are, however, many sections of double track lines passing through sparsely populated country upon which the distance between attended stations is greater than the length of block sections necessary to handle the traffic. Under these circumstances, automatic signals have, with advantage, been installed to divide the sections between attended stations. The length of such sections varies, of course, according to circumstances, but they average about five miles and, at the present time, the number of country sections of automatic signals is 40. This equipment will probably appear small to American readers who are accustomed to stretches of hundreds of miles of automatic territory, but it must not be forgotten that the conditions in respect of through traffic are entirely different from those prevailing on American railways, and in view of the comparatively recent development of heavy traffic on these railways, it is somewhat remarkable that even this amount of automatic signaling has become necessary and profitable. In support of this statement it should be mentioned that it was only within the last 10 years that any considerable mileage of trunk line beyond the metropolitan area has been doubled.

The standard practice for automatic signals is upper-quadrant left hand, 3-position. Upon the country sections referred to, the mechanisms are invariably of the low voltage type, and BSCO cells are employed for both these and track circuit purposes. The signals are of the familiar topmast mechanism type, and, so far as construction is concerned, American practice has been followed to a large extent. A feature which has been adopted with advantage is the concentration in a small hut of the track relays and batteries for each signal location. This plan has been found to afford great assistance for maintenance purposes, and advantage is taken of the roof to ensure a water supply for the batteries.

Turning now to the automatic signaling in the suburban area, it may be stated that this extends from the metropolis, roughly, for a distance of nine miles on one line, and eight on another, the bulk of the route being four-track and in some cases eight-track. The earlier portions of these installations consist of lower-quadrant, two-arm signals, and as when the system was first introduced an electro-pneumatic power plant already existed in Sydney yard, advantage was taken of this to provide electro-pneumatic signals. Outside the electro-pneumatic area, with the exception of one smaller installation of all-electric signals operated with 60-volt motors (also lower quadrant, 2-arm), upper-quadrant, 3-position signals, operated by alternating current mechanisms with alternating current track circuits have been introduced, and in view of the advantage of alternating current operation it is hoped to extend this system in all future suburban work. For the alternating current signaling, power is supplied at 2,200 volts from the power house belonging to the railway department, from which the whole of the tramway system and railway lighting system of the metropolis is supplied. The alternating current is supplied to the signal mechanisms and track circuits in the usual way through transformers at the various locations, and the signals are lighted electrically. It is unnecessary to enter into any exact details of these signals as American practice has been fairly closely followed. A point of interest, however, is in connection with the lights provided for the upper-quadrant signals. It has not been considered expedient here to introduce the yellow light for the third indication, and instead of doing so, the original British practice of two lights has been maintained. When electric lighting of the signals is provided, the lower light is controlled by the contact-makers on the mechanism barrel, and the indications are:

Two greens—"All Clear."

Green above red—"Caution."

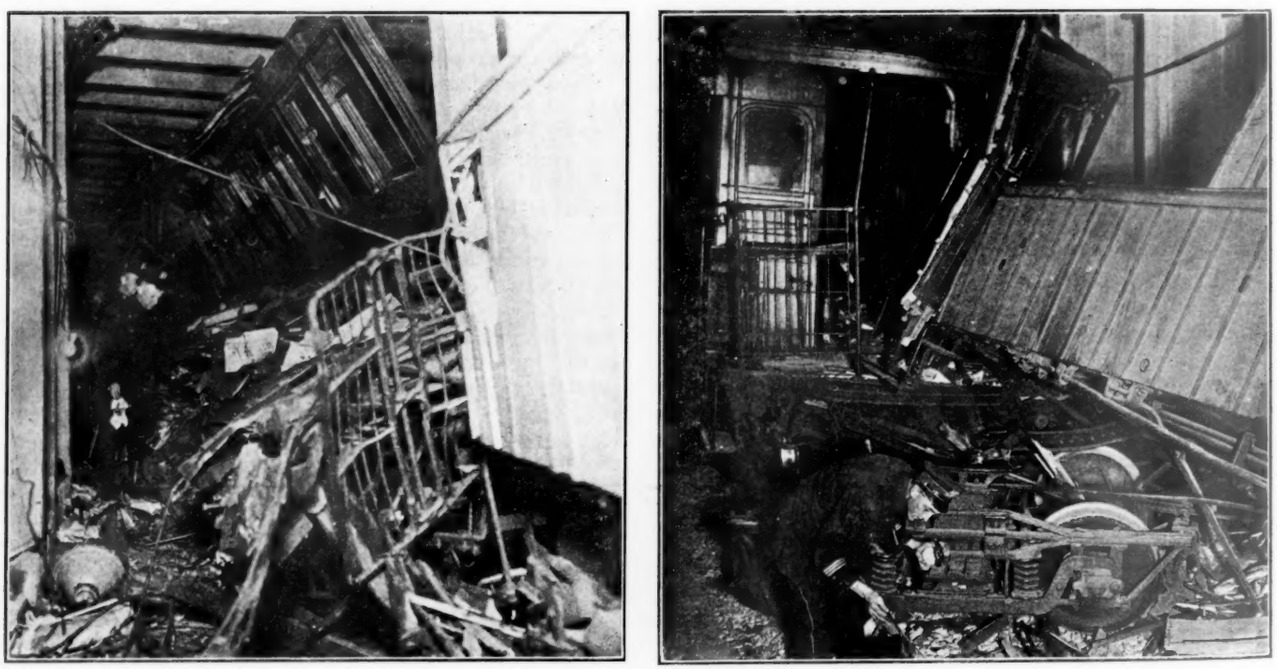
Two reds—"Stop."

In the case of the country signals, where electric lighting is not available, a lower movable spectacle has been provided, which is operated by a slotted connection from the main mechanism. The lower spectacle shows two lights only —red and green. When the arm rises to 45 deg. the lower spectacle remains at red, but when the upper arm rises to 90 deg. a stud engages in the slot of the down rod and lifts the lower spectacle so that it shows with a green light. This arrangement has been found quite satisfactory in practice and has the great advantage that it conforms to the practice in mechanical signaling areas throughout the state. There is very considerable scope for the use of automatic signaling on the New South Wales Railways, and but for the war much greater progress in this respect would have taken place than has been the case.

Ninety-two Passengers Killed in Brooklyn, N. Y.

IN THE DERAILMENT of a southbound passenger train of the Brooklyn Rapid Transit Company, at a sharp curve at Malbone street, Brooklyn, N. Y., on the evening of Friday, November 1, about 7 o'clock, 92 passengers were killed, and about 100 injured. The derailment was due to excessive speed, the motorman evidently being not well acquainted with the road.

The train, from Park Row, Manhattan, and destined for Brighton Beach, consisted of five cars, two of them motor cars, and all but one or two of them wooden. It was crowded with passengers on their way home from work, and was about ten minutes behind time because of delay due to a mistake in taking the wrong track at a junction, which mistake necessitated a short backward movement. At Malbone street, where the tracks run in a covered subway for about 200 ft. the southbound track was recently changed so as to divert the trains into a new subway, at the right of the older line, and it was at the entrance of this new subway, on a curve of 240 ft. radius, with a speed limit of six miles an hour, that the derailment occurred. The motorman, who was one of the few survivors in the leading car, admitted that the speed was about thirty miles an hour, and good judges estimated it at a much higher rate. A naval officer riding in the train, thought that it was seventy miles an hour. The first car was wrecked by striking the first column at the



Cars Wrecked at Malbone Street, Brooklyn, N. Y., on November 1

beginning of the row of steel columns which constitutes the left side of the new subway, and, with one or two following cars, was crushed into a mass of wreckage as bad as ever was seen in a butting collision of trains running at a mile a minute.

The motorman, 29 years of age, was a crew despatcher, serving as motorman because of a strike of regular motormen. He had had some little experience as yard motorman but seems to have made few or no trips in charge of trains. The strike, started by the men to compel recognition by the company of the Brotherhood of Locomotive Engineers, had been compromised by a conference which was in session at the time of the derailment.

The mistake at the junction was due to the absence of classification lights on the train so that the signalman did not know its destination; and the motorman accepted the wrong signal because of his inexperience on that part of the line.

Women in the Offices of the Canadian Railways

Equal Men in Accuracy and Performance on Simple Jobs, But Are Not So Good for Complex Work

By J. L. Payne
Comptroller of Statistics, Ottawa, Canada

WHEN Canada began sending troops in large numbers to France the railways were among the first and chief sufferers from the shortage of labor which followed. In view of the general character of railway employees, as to physical fitness and those qualities which are broadly comprehended in the word "manhood," this was not surprising. Wherever you find him there is something in the nature of a railway man which suggests a ready responsiveness to such a call as the war created. He is courageous, self-contained and sympathetic. Beneath the veneer of a bluff and often blunt exterior he carries a warm heart. I know railway men from long contact with them at their work, and this sums up my diagnosis of them. Be that as it may, they threw themselves by thousands into the great struggle, and hundreds of them now sleep "where poppies blow in Flanders."

The Canadian Pacific and Grand Trunk together lost 15,000, and this fact at once presented an acute problem to those charged with the duty of keeping up the working staff. The adjective is used advisedly; for while in 1915 a marked decline in traffic took place, in 1916 and 1917 business swelled to an unparalleled volume. This accentuated the losses from enlistments, and administrative officers were at their wits end to keep the wheels moving. In one staff of 700 there were in the first six months following the outbreak of war more than 900 changes. It is not my purpose to deal in this short sketch with that aspect of what happened, but to limit my observations to the measures which were taken to recruit the general office staff. In short, I shall write almost wholly of what was done to meet the demand for clerical help.

Obviously young men were not to be had in considerable numbers. Only those who were ineligible for military service were available, and the young fellow who could not take some place in the campaign was often unsuitable for the strenuous work of a big railway office—for it is both hard and trying. In this situation it became necessary to fall back on women. Now, contrary to my suspicions, it was not a new thing to utilize female clerks. By degrees young women had been taken into certain branches of the head offices, until in 1914 they made up 40 per cent of the staff in the passenger and freight auditing divisions. This was at least twice the proportion which I had assumed; but it was no new thing to discover I was wrong. Such experiences are slowly developing a chastened spirit and a shrinking from positiveness in relation to many things. Wishing to learn on the spot what had been the general results of this revolution in the larger railway offices, I ran down to Montreal the other day and got into personal touch with a number of the principal departmental heads. I was anxious to find out a great many things growing out of this new situation, and it was my good fortune to find everybody communicative on the subject. My inquiries were distributed over a number of heads, and in the categorical order in which they were made I shall proceed without further introductory remarks to present the answers.

The Canadian Pacific and Grand Trunk employ upwards of 1,500 female clerks. Fifty per cent of these have been brought in as the result of war conditions, and to that extent they may be said to have taken the places of men who were enlisted from the general offices. These recruits did not, as has been said, enter a new field. There were other girls there who had been initiated and had become accustomed to the work and to the conditions. This was clearly fortunate for both the railways and the new clerks. In groping for an answer to the comprehensive question as to what measure of success had attended this employment of female clerks on a large scale, I found myself compelled to approach final conclusions by a series of stages. The issue turned sharply on a comparison with men, and in pursuing that parallel a number of striking facts were disclosed. I wanted to know, for example, in what respects girls had been found either superior or inferior to male clerks, whether or not they had more readily adapted themselves to certain types of work, to what extent they had revealed definite defects and so on. Along those lines, therefore, the inquisition proceeded.

Accuracy and Responsibility

The chiefs told me that in respect of accuracy they had found female clerks on the same footing as men. This was in compilation work. Neither sex had showed a clear superiority; but the girls got through their assignments quicker and were contented in their plodding. So that, while not a whit more liable to make mistakes, they accomplished a slightly higher volume of work as a group. This gave them the edge in the rivalry; but at that point a strange difference was asserted. When it came to assembling a mass of tabulation sheets and striking what are termed "balances," the male clerks showed an undoubted superiority. The girls shrank from any complexity, or what might broadly be defined as responsibility.

This preference for simplicity of task was best described by the inspector of a large bank to whom I incidentally appealed for collateral information as to his experience in the exigencies brought about by the war. "We have not," he

said, "a young man in our head office who would hesitate before taking any promotion offered to him. He would without doubt answer in the affirmative if asked whether or not he felt able to hold down the general manager's job." And that is true of young men in all stations. Many of them might lack the ambition and self-confidence which would stimulate positive effort toward high places; but very few of them would shirk the responsibility involved. "It is different with girls," said the inspector; "they prefer to work along the lines of a definite pattern which is congenial by familiarity rather than to venture upon tasks which are more or less intricate or executive in character." This it might be observed, probably proceeds as much from a dread of failure as an innate sense of limitations.

Right here would seem to be the place for the recognition of what, for the want of a better definition, must be classified as a defect in the employment of female clerks. The idea in a broad way is touched upon in N. H. Greenberg's letter to the *Railway Age* of September 6. In all offices experience is very properly appraised at high value. It represents the just basis of salary increases, and carries with it the expectation of promotion to positions having to do with the direction of a subordinate staff. It is not so much that young women are wanting in the capacity to direct others as that they have no aspirations in that direction, and, with but few exceptions, are temperamentally unsuitable. In the rarest instances, moreover, has it been found practicable to place women in charge of men. The latter resent such control. Then there is the uncertainty of their tenure. Just when they have attained to the highest measure of usefulness they are apt to get married.

When a man takes a wife his anchorage is assured; but when a girl enters into matrimony she is invariably lost with all the training she has acquired. The brighter they are the greater is this danger, as I know from a bitter experience. I have had 10 office assistants of the gentler sex, and seven of them were lost to me through marriage. I am in mortal dread that the eighth is moving stealthily in the same direction. This is a factor in the whole problem of female labor which not only cannot be ignored, but which is a distinct and irreparable weak spot from the employer's point of view. The Canadian Pacific and Grand Trunk lose 25 per cent of their female clerks every three years because of marriages; and strange to say, not more than three per cent of these lost clerks marry other clerks in the railway service.

Before the war female clerks started in the railway offices at $30 per month and went up to $90. Now the minimum is $55 and the maximum $105. Young men were paid on a more liberal scale. The McAdoo award, which was adopted in Canada, placed the sexes on an equal footing. Where they do the same work they receive the same remuneration. This has had the effect of making it easier to secure competent clerical help. I inquired as to what had developed along this line, and was told that, whereas girls had been readily obtainable in the early months of the war, there was now some difficulty. The demand from other industries had created a competitive situation; so that, on the whole, the railways were not able to exercise the same selective privileges as they had done four years ago. This has made for the employment of mediocre skill in some measure.

Temperamental and Sex Eccentricities

Allusion has been made to the difficulty in having female clerks move up to high posts, and in that connection it was pointed out that men do not like to be under the direction of women. That is not surprising when the history of the race is taken into account; but it is amazing that another obstacle to the advancement of women arises out of the resentment of their own sex. Girls would rather receive orders from men. They fret under the control of another woman. No matter how this fact is viewed, there is no escape from the conclusion that at bottom the real cause lies in the other fact, existent since creation, that every woman is every other woman's rival. Hinged to that unwritten law, which men are never able to understand nor to recognize, are other and very subtle difficulties which are inseparable from the employment of women in groups. They take strong likes and dislikes, which rest on reasons no man can ever find out. "I should like her." The patient chief, who has not after many years of study got one whit nearer the psychological foundation of the matter, suggests: "You do not know her. She only came in a week ago." No use, however. "Of course, I do not know her," is the reply, "but nevertheless I dislike her and would rather leave than work either with her or next to her." This may seem like introducing trivialities. I assure you the chiefs of divisions do not hold to that view. These temperamental and sex eccentricities are part of the very warp and woof of the whole fabric, and are only small to those who are inexperienced.

"Have you succeeded in meeting the dearth of male clerks by the substitution of female clerks?" was my final question to the executive heads of the Canadian Pacific and Grand Trunk. While the reply was in the affirmative, there were large and somewhat important qualifications. Some of these have been presented. One chief of a large branch was quite convinced that, while the work was being done as accurately and effectively as in the years of peace, it was costing more. He was prepared to say that, allowing for loss of time from illness and other interferences, it took four young women to do the volume of work formerly done by three young men. While this had not occasioned the same relative increase in cost, it had nevertheless added to the expenses in some degree. From what others had told me, I am disposed to think this additional cost arose in large degree from the difficulty, to which I have alluded, of getting girls to change readily from a class of work with which they had become familiar to another. It had not cost more for minor clerical services.

Women Workers Have Come to Stay

As to the permanency of existing conditions in railway general offices, I found a consensus of judgment on the point that girls had come to stay. It would be premature to speak dogmatically; but it would be surprising if railways should be immune from the obvious change which has come into nearly all the affairs of life. Women have not only invaded practically all fields of human activity, but they claim the right to remain. They usually have their way. Whether or not, in the final reckoning of real values, this will make for betterment and happiness, time alone will tell. I have no disposition to speculate; but I am not isolated in wishing that women had bent all their resourcefulness and exalted influence in other directions. Perhaps the forces of adjustment will operate side by side with this momentous movement, and all will come out right.

Space does not permit my taking up the place which has been given to women in the mechanical branches of the railways. The facts, however, have been presented by others in fairly full measure. Both the Canadian Pacific and Grand Trunk now employ hundreds of women in the workshops, where only men were found anterior to the war. On the whole, the experiment has been successful. Recruits from all classes in the community have entered the shops in large numbers. They like the novelty and freedom given by the uniform they wear. The men accord them chivalrous treatment, and they have displayed an adaptability which is little short of marvellous. They do a great variety of skilled work, and do it singularly well. This is strikingly true in the paint and upholstering shops. They also operate lathes and other machines with skill and allround efficiency. In some varieties of piecework they have attained a speed unequalled

by men. They make good earnings, and it looks as though another preemption has been lost to the male sex.

These general conclusions accord with the recently published report of the United States Employment Service at Washington. I have no disposition to enlarge on this aspect of the situation as created by the war, but the question is irresistible: What would have happened to the railways if women had not come in this way to their rescue?

French Chef de Gare System and Train Operation

The Need of Centralized Control of Freight Train Movements, Freight Car Supply and Train-loading

FREDERIC A. DELANO, Major of Engineers, U. S. A., formerly president of the Wabash Railroad and later a member of the Federal Reserve Board, at Washington, and who is now in France, has made to Brigadier General W. W. Atterbury, chief of railroad operation under General Pershing, a special report on French railway operating methods from which the following article is taken. As the reader is, no doubt, aware, from letters which have been received from France during the past year, American trainmen in France do not in all cases have their railroad all to themselves; they have to run over French railroads on which French emyloyees are in authority and many French practices prevail.

The report follows:

One thing that surprises every American railroad man in the French method of railroad operation is the immense authority given to the Chef de Gare. He is a good deal more than our "station agent," even though the position of station agent or local agent in some of our large stations in America is not infrequently very important. Under French methods of operation, the Chef de Gare not only is in complete charge of all operations within the limits of his station, including distribution of cars and movement of trains, but a through train having arrived at the station, may not pass out of it without his authority.

That such a system should have developed in France, and until the time of this war proved reasonably successful, indicates either that it has some good features about it, or that the conditions surrounding the operations of French railroads are so different from those we are familiar with in America as to justify it.

Manifestly, one of the good points of the system lies in the fact that raising the importance of the local agent attracts to the service a higher class of men. Hence, small wonder that the competition for places in this branch of service is keen, and that there are numerous applicants for vacancies, which are filled by periodic examinations of candidates. Thus, if a railway system has fifty or one hundred places to fill it is not unusual for five, or even ten times that number of young men, limited to the ages eighteen to twenty-five, to present themselves as candidates.

The applicants are all given a simple written and oral examination in reading, writing, arithmetic and geography, and those who are accepted are taken on probation for a year at a very low salary. At the end of the year they are given assignments as assistant station agents, these being graded into three or more groups, according to the size of the station to which they are to be assigned and the difficulties of the positions.

The French, in spite of paying very small initial salaries, are apparently able to attract a good class of men for this service, and judged (as they should be) by French standards, the position of Chef de Gare at the larger stations is decidedly important and well paid.

The objection to the system which has developed in "wartime," and especially since the problem of supplying the English and American armies has thrown a large transportation burden upon the railroads, is that it places a serious limitation on the transportation capacity of the railroads. It is no exaggeration to say that there are a good many single track railways in the United States which do a much larger volume of business, particularly in tonnage moved, than some of the double tracked lines of France. This has been accomplished in the United States in three ways:

(1) By reason of much greater tonnage moved per train.

(2) The closer intervals at which we can run trains by reason of the block system.

(3) Because the movement of trains is not left in the hands of the station agent, but is solely in the hands of train despatchers and trainmasters at centralized points, who, acting under a general superintendent of transportation, move trains much as the commanding general of an army moves his troops.

Another way in which the French system has broken down, under the pressure which has been brought upon it, is in the supply of empty cars for loading. Doubtless under the conditions of business, much of it very short haul and well balanced, which existed on French railways prior to the war, the distribution of cars to local industries could be safely left to the Chef de Gare. The Chef de Gare would ordinarily receive a sufficient number of loaded cars to supply current wants when made empty; and while there were exceptions to this rule, the exceptions were probably not very common. In the same way, the import and export tonnage at French ports was so nearly balanced that the loaded movement of cars to and from seaports was nearly, if not quite, equal, so that there was no great necessity for a centralized supervision of car movement.

But the war has changed all this. On the one hand, the commercial business of France has been compelled to suffer and has been starved to a minimum, while fully two-thirds or even three-fourths of the freight business of the railroads is either directly connected with the transportation of food, ammunition and the other requirements of the army, or indirectly connected with army needs in supplying raw material to the factories making army supplies. In addition to this, England and the United States have been pouring into the seaports of France an immense tonnage of freight which has had to move, in the case of the United States, from 500 to 700 miles across France; and this movement, while it was all long haul business and would lend itself to economic and low cost transportation, has, because it moves only in one direction, put the burden on the railways of a heavy movement of empty cars. This is what we call a badly balanced business!

In trying to keep the seaports supplied with cars the managers of the railways soon found that the trains of empties which they were sending back from the battle front to the seaports were being used to supply the various stations with their local or commercial requirements; and this at once developed another fatal weakness of the system; to wit, the lack of centralized supervision over the car supply.

The remedy for this situation may be viewed from two standpoints:

First, what should be done while the war lasts?

Second, whether there is not room for a decided improvement even after the war.

It would seem to be a pity to lower the standard or morale of the Chef de Gare. Every railway officer, whether in America or in France, must appreciate the importance of having the railway service well represented in its relations with the public, and if this public relation can be improved by aggrandizing to some extent the position of the local agent, as appears to be done under the French system, it is all to the good. If, on the other hand, the operating capacity of the road is diminished, or the full use and distribution of railroad cars is not secured, that is a serious matter which should be met in some adequate way.

Under the American system of centralized supervision of train despatching, and with the more frequent block signal interval, it is not only possible to move trains safely and at closer intervals, but a station agent is held responsible for unnecessarily delaying a train. For example, there would be no excuse under our system for holding a through freight train at a station, however important; and yet that occurs in France repeatedly, and by reason of the lack of centralized supervision a station agent at any point does not know that a train is coming until it arrives. Even then he may obtain a very tardy or inadequate notion of its importance.

It may be that in France the volume of passenger business being relatively greater, on account of the density of population, or the volume of freight being relatively less on account of the much shorter hauls, has caused the serious delays to freight trains and freight cars to be readily tolerated. Certain it is that long-distance freight trains scheduled to make 18 to 20 miles an hour, common in the United States for all high-class freight, are comparatively unknown in France, while the movement of the heavy bulk commodities, such as coal, iron ore, and iron products, in heavy trains, at very low rates, is entirely unknown.

Under the Chef de Gare system there is, as already suggested, no supervision of the use of cars; for instance, there is nothing to prevent a station agent at "A" from using a car for unimportant short haul business, or even for brouettage (intra-yard) service, when there may be a great shortage of cars for more important business a few miles away. In America the decision as to how cars shall be distributed is left with officers sufficiently high in rank and well informed as to general conditions to enable them to weigh the relative importance of the demands and determine upon a *desirable,* and as near as may be *equitable,* distribution. In a country as big as the United States it often occurs, and must occur occasionally in a country like France, that there are times in the year when certain commodities must be moved in preference to all others; thus when the harvest season is on, crops which are being harvested must often be moved promptly, if at all. At other times coal must have preference. Some business can frequently afford to wait, whereas other business cannot.

The breakdown of the transportation facilities in France today cannot be attributed in any sense to lack of railway trackage. That seems to be ample, and in many cases more than ample. It is true that yard facilities, and especially passing track facilities, are very inadequate for handling such trains as we in America would deem necessary and economical, but the break down must be attributed to the following:

First, to the shortage of personnel in the locomotive and train service.

Second, to the shortage of locomotives and cars, chiefly the former, the apparent shortage of cars being due largely to the fact that they are not moved promptly.

Third, to the Chef de Gare system by diminishing the capacity of the road and slowing down the movement of trains and of cars.

In conclusion, the solution seems to lie, as already indicated—

First, by putting in a centralized despatcher system, telephonic or telegraphic, through which a General Superintendent of Transportation will have supervision over the train movements, through the Chef de Gare if you like, yet in complete command and control.

Second, by a system of car records and car distribution through a centralized office.

Third, by introducing the American block system on the more important lines so that trains may be safely operated at closer intervals.

Fourth, by increasing, carefully and intelligently, the train load so that more tons may be successfully moved in each train. In other words, the movement of this greater tonnage will be accomplished without increased personnel (a) by reducing transit delays on the road, and (b) by running trains in larger units. There seems to be very considerable room for improvement in both directions.

The Vibrophone

IT IS VERY OFTEN DESIRABLE to use some distinctive whistle or signal as a warning for traffic or to facilitate some phase of railroad operation, and various devices for this purpose have been developed and placed on the market. A new audible warning signal of this character which is of interest to operating men has been placed on the market under the name of the Vibrophone by the Newman Manufacturing Company, Pittsburgh, Pa.

The Vibrophone is an air vibrating whistle for use in connection with existing air lines. It makes a loud penetrating and distinctive noise that can be readily distinguished from any locomotive, factory or other steam or air whistle, even at a distance. It is simple in construction as it has no complicated mechanism or small parts to repair, be lost or kept in order and can be easily attached to air lines with a piece of ¾-in. pipe. It consists of three parts, a brass cap, the megaphone and a phosphor-bronze diaphragm. The Vibrophone is designed to operate with a pressure of from 25 lb. to 80 lb. of air. A good noise is produced with the minimum pressure but the greatest penetrating and carrying power is obtained when the pressure ranges from 60 lb to 80 lb. When it is necessary to use this instrument on a pressure of over 90 lb. and it is not desired to cut it down by the use of a safety valve, the Vibrophone can be furnished specially equipped for the higher pressure. It is claimed that the volume of air required is less than for the common types of whistles ordinarily in use.

The Vibrophone

One of the uses for this whistle is at hump and scale tracks in classification yards. It can also be used to advantage on work trains, wrecking trains, inspection cars and snow plows, flangers and other equipment of a similar nature which may be run ahead of the engine. Other uses are on drawbridges and similar structures as a warning to water craft or approaching trains, as a fire alarm at shops, roundhouses, docks and other structures, or at signal towers for signaling passing trains, stopping traffic or calling for help in emergency.

Orders Issued by the Regional Directors

These Orders and Instructions Indicate Great Activity in All Departments of Operation

SEMI-MONTHLY PAY ROLLS.—In Order 107 and Circular 198 of the Southwestern and Central Western regional directors respectively, it is announced that the director general desires all railroad payrolls which are now being paid on a monthly basis to be paid semi-monthly, effective not later than January 1. See also *Railway Age,* Nov. 1, page 787.

Movement of Oil.—Circular 196 of Central Western regional director—same as Supplement 3 to Circular 72 of Northwestern regional director. See page 700, *Railway Age* of October 18.

Use of Stock Cars.—In a telegram dated October 30, the Northwestern regional director canceled his instructions of October 5, restricting the loading of stock cars to live stock, live poultry and perishable freight. This does not affect any local restriction required by an individual road.

Emergency Transportation to Express Employees.—The Northwestern regional director announces in Supplement 11 to Circular 20 that the roads in his jurisdiction are now authorized to issue emergency transportation to employees of the American Railway Express Company on account of sickness or death, including passes for corpses. This action was taken on account of the influenza epidemic at the request of vice-presidents of the express company.

Movement of Business Cars.—In a circular dated October 25, the Central Western regional director announces that federal managers may operate their business cars over other lines when it is necessary to do so for business purposes.

Ordering Rail for 1919.—In Circular 124 the Southwestern regional director announces that the distribution of rail for the balance of 1918 and the calendar year 1919 will be handled from Washington. Out of 2,000,000 tons of new rail ordered by the railroads for delivery in 1918 it is expected that not over 1,400,000 tons will be delivered, making a shortage of about 600,000 tons in 1918, and at the present time it is not known in Washington how much rail can be rolled during 1919 as the entire proposition is dependent on how much steel will be required for war purposes. Under instructions from Washington the rail mills will not accept orders for new rail from individual railways and it is up to the individual lines to indicate on their 1919 budgets the new rail which is actually required for safety purposes only. After the budgets for all the railroads have been received in Washington the allotment of rail to the different railroads will be handled by the Railroad Administration officers. Railways will have to accept such amounts of rail as are assigned to them and make the best disposition thereof that is possible.

Air Compressors for Locomotives.—The Southwestern regional director, in Circular 125, suggests the advisability of changing to 8½-in. cross compound pumps on heavy power when locomotives receive class 1, 2 or 3 repairs, if the cross compound pumps can be obtained. An 8½-in. cross compound air compressor will produce approximately three times as much air as will a 9½-in. simple air compressor, approximately twice as much air as an 11-in. simple air compressor, while the number of pounds of steam used per 100 cu. ft. of air is approximately one-third as much in a cross compound pump as in the simple types. The use of the compound compressor will therefore be in the interest of the maximum supply of compressed air as well as in the interest of fuel economy.

Export Licenses.—Hawaii.—In Circular 123, the Southwestern regional director announces that the impression that export licenses are necessary for shipments to Hawaii is incorrect, as Hawaii is a part of the United States of America.

Storage Coal.—The Southwestern regional director, in Order 103, and the Central Western regional director, in a circular dated October 24, direct the roads under their jurisdictions to formulate a program for taking up their storage piles of coal which will insure absolutely the consumption of storage coal by March 1, 1919.

Heating Troop Trains.—The Southwestern regional director, in Order 104, and the Central Western regional director, in a circular dated October 25, direct the roads under their jurisdiction to ascertain that steam heat equipment on troop trains is in proper condition as to pipes, valves, etc., and that steam hose is applied to each car. When heat is required and where hose is lacking, it should be applied to the equipment by the road upon which the trains originate, to eliminate delays in the transportation.

Clearance Warning.—In Order 101, the Southwestern regional director calls attention to a suggestion by a safety committee on one of the Southwestern roads that a board be installed at switch stands of tracks leading into industries where there is not sufficient clearance, reading "These buildings will not clear a man on top or side of cars." The regional director suggests that unless something better is in use, this board be installed on all roads in his region.

Protection of Employees Against Loss of Pensions and Similar Benefits.—In Order 102 the Southwestern regional director and in Order 3000-436 the Eastern regional director state that there has been a number of cases of employees on one road under federal control on which a pension or other similar benefit system is in effect, having been transferred to service, under the director general, not within the scope of the pension or benefit system which covered his previous employment. Railroads will request the corporations, where they have the power and right to do so, to take such action as may be required to preserve the transferred employee's status with respect to the pension or benefit system after federal control, to the extent that it would have been preserved if there had been no federal control and the employee had remained at work on the road and the other conditions of the preservation of the status had been observed. Until further orders during federal control, any such transferred employee will retain the benefits of the same pension or similar system as attached to his previous employment provided he complies with such conditions if any with respect to payments, etc., as may be obligatory upon him under such a system.

Pay of Miscellaneous Supervisory Officers.—In a circular dated October 22, the Central Western regional director asks for recommendations regarding increases in rates of pay for such officers, sub-officers and similar employees as were not covered in General Order 27 and its various supplements.

Legal Representatives of Railroads at Washington.—In circular No. 122 the Southwestern regional director and in Order 3000-432 the Eastern regional director announce that R. Walton Moore, Colorado building, Washington, D. C., has been designated statutory agent and will perform the service formerly discharged by the legal representatives of individual lines at Washington who have acted as statutory agents for the service of matters of the Interstate Commerce Commission, and as intermediaries in the settlement of accounts to the various departments of the government. Accounting and other departmental matters will hereafter be handled by him

direct with the proper department of the government or, in the event of dispute, may be taken up with the appropriate division of the Railroad Administration. If any legal representatives or statutory agents at Washington of individual roads still remain on the payroll they should be discontinued effective November 1, unless their retention has been definitely authorized. This does not include those who may be retained and paid by the corporation. To avoid confusion it is suggested that any of the corporations which do not desire to maintain for their separate accounts statutory agents at Washington should issue formal revocations of the designations heretofore made.

Industry Tracks.—The Southwestern regional director, in Supplement 1 to Circular 102, states that in special cases when an industry desires a track constructed for temporary use which is not necessary from the standpoint of the railroad, it may be arranged to have the industry bear the entire expense of the construction of the track, including the cost of the turnout. When such a temporary track is removed, the industry will be credited with the value of the salvaged material less the cost incurred in removing it. Cases of proposed industry tracks of this character are to be reported to the regional director for approval.

Export Permits.—The North Pacific Export Committee, Northwestern region, has issued circular No. 1-A, canceling circular No. 1, outlining rules to govern the movements of export freight through Portland, Oregon, Astoria and Puget Sound ports. The revised rules are as follows:

1. Until further notice no shipment for export to foreign countries except Canada through the ports named will be received for transportation until the agent at point of shipment has been furnished with a railroad shipping permit (except as provided in paragraph 5) issued by this committee.

2. Railroad shipping permits will be issued only on satisfactory showing of compliance with requirements of U. S. Government in connection with export shipments, including export licenses when required, and definite space engagement with a steamship company which has met all requirements of the railroads in connection with the issue of through bills of lading. Such permits will be numbered with prefix J. E. A. and issued in the name of this committee. Permits covering shipments to be exported via Puget Sound ports will be issued by F. A. Peil, chairman, Puget Sound sub-committee, headquarters Seattle, Wash., and permits covering shipments to be exported via Portland or Astoria will be issued by the undersigned.

3. Railroad shipping receipt and way-bill must show—
   (a) Number of Government (War Trade Board) license when such license is required.
   (b) Railroad shipping permit number.
   (c) Name of railroad which is to make delivery to ship.

4. Shipments exceeding quantity or weight provided in railroad shipping permit must not be received and when part lots are forwarded full description must be endorsed on permit with date and place of forwarding.

5. If a shipment is to be made from more than one point or from a point other than that named in the railroad shipping permit, the holder of the permit may surrender same to manager, Trans-Pacific export bill of lading bureau, 143 Liberty street, New York, N. Y., or to G. T. Stolp, joint agent North Pacific coast terminal lines, Railway Exchange building, Chicago, Ill., who will authorize initial railroads to accept a specified tonnage after endorsing upon the original railroad shipping permit the tonnage to be forwarded from each point. Aggregate tonnage must in no case exceed specifications in the permit.

6. Railroad shipping permits are issued with a time limit; shipments must not be accepted by initial railroad carrier after expiration of permit.

7. Shipments heretofore authorized by permits of F. R. Hanlon, joint export agent, or J. H. O'Neill, terminal manager, may be accepted prior to the date of expiration shown in such permits.

8. Shipments covered by U. S. War Department transportation orders are not subject to these requirements.

Denomination of Bills Presented in Payment for Tickets.—Circular of Central Western regional director, dated October 24—same as Order 98, Southwestern regional director, see page 779, *Railway Age* of November 1.

Protection of Perishable Freight.—Circular dated October 28, of Central Western regional director, same as Orders 50 and 100 respectively of the Northwestern and Southwestern regional directors. See page 780, *Railway Age* of November 1.

Execution of Contracts During Federal Control.—In Supplement 1 to circular 109, the Southwestern regional director announces that all operating contracts or contracts pertaining to the handling of road and equipment or for rendering transportation service to or by the Railroad Administration, which are made in the name of the director general, including written agreements respecting the transfer of passengers, baggage, mail or l. c. l. freight or respecting electric or telephone service, gas supply, water supply and the handling of fuel still contain a proviso substantially as follows:

Anything in this agreement to the contrary notwithstanding: the term hereof shall be concluded, as to the undersigned director general of railroads, by termination of federal control of the railroad whereof a portion is brought hereunder; provided: at the election of any outside party operating said railroad consequent on the termination during the term hereof of said federal control, this shall for the remainder of the term hereof be deemed a new and independent agreement between said outside party, as the (see Note "a") herein, and the (see Note "b"). Also, the covenants or undertakings herein shall inure to the benefit of or bind the party, as the interests thereof may appear, from whom said railroad was commandeered provided said party so elect.

Note "a": Insert the particular designation used in referring to the director general of railroads in the agreement.

Note "b": Insert the particular designation used in referring to the other party in the agreement.

Working Hours of Locomotive and Car Repair Forces.—In order 106 and a circular dated October 26, the Southwestern and Central Western regional directors respectively announce a working schedule for employees in locomotive and car departments during the coming winter:

The hours for men in the locomotive department should be not less than 58 per week divided as follows: Five days of 10 hr. each, 8 hr. on Saturday. If Sunday work is found necessary, 8 hr. every second Sunday should be worked.

Such overtime as may be necessary to balance shop work for the complete repairs to a locomotive that is being turned out will, of course, be worked as usual in addition to the above hours.

Beginning November 15, the hours for car department employees should not be less than 53 per week, divided as follows: Five days of 9 hr., 8 hr. on Saturday. If Sunday work is found necessary, 8 hr. every second Sunday should be worked.

On roads which can maintain the percentage of bad order cars below four, 8 hr. per day may be worked.

A reduction in the hours of the car department forces is made because work must be done chiefly in daylight hours.

Plan of Organization of Purchasing and Stores Department.—Order 108 of the Southwestern regional director and Circular 195 of Central Western regional director outline a plan for the organization for the purchasing and stores departments as agreed to by the director of the Division of Finance and Purchases and the director of the Division of Operation of the Railroad Administration:

1. The purchasing department shall be in charge of a general purchasing agent or purchasing agent reporting direct to the federal manager, or general manager where there is no federal manager in charge.

2. The purchasing agent, in co-operation with the regional purchasing committee, shall buy all material and supplies, including fuel, dining car and restaurant supplies, and sell all scrap and obsolete material, including equipment. He shall also have direct charge of the handling of scrap and the reclaiming of usable material.

3. He shall be responsible not only for the purchases and sales, but for the quantity of material on hand, the custody, care and distribution thereof, and charges therefor, and necessarily shall have charge of all material not in actual use and of the storehouses and other places where material is stored.

4. He shall be aided by and shall appoint a general storekeeper and other necessary assistants such as fuel agents, stationers, tie and timber agents and commissary agents, who shall report to the purchasing agent direct.

5. An exception as to paragraphs 3 and 4 may be made, with approval of the regional director, upon railroads where the stores department is separately organized, and now reporting direct to the federal manager.

6. All storekeepers and all others, more than half of whose time is devoted to the handling or accounting for material, shall be appointed by and be under the charge of the general storekeeper and on his payroll.

7. All appointments of purchasing agents, general storekeepers, fuel agents, tie and timber agents, shall be subject to the approval of the regional directors.

8. The regional purchasing committee with the approval of the regional director shall appoint a supervisor of stores to have general supervision over the stores department and reporting direct to the regional purchasing committee.

Fuel Conservation.—In Circular 128 the Southwestern regional director and in Order 3000-434 the Eastern regional director quote a letter from the manager of the fuel conservation section, calling attention to fuel savings which may be effected by stopping water waste. The percentage of water wasted by railroads is estimated as high as 15. C. R. Knowles reported to the American Water Works Association in 1916 that as a result of a water waste campaign the Illinois Central reduced its expense for city water alone from $225,113 in 1914 to $190,439 in 1915. The expense

for city water represented, he said, only about 40 per cent of the total cost of water, 60 per cent being for water pumped by company forces. Mr. Knowles estimates that American railroads consume daily approximately 1,950,000,000 gal. of water at a daily expense of over $100,000.

The manager of the fuel conservation section is of the opinion that a considerable saving in coal and also in money could be effected by the railroads through a campaign among employees to reduce water waste. He lists some of the most common forms of waste on railroads and remedies which have been applied.

Annual passes for 1919.—The question has arisen on a number of railroads whether an employee requiring annual passes over the lines of other federal managers should be furnished an individual pass over his home line in addition to the pass covering the other lines, or whether one pass will cover all lines. In order 109, the Southwestern regional director announces that the office of C. R. Gray, director of the division of operation of the Railroad Administration at Washington, will issue one pass per employee which will cover both transportation on the home line and other roads.

Salary Increases.—In a circular, dated October 31 the Central Western regional director announces that the increases of 25 per cent recently granted to the roadmasters has also been authorized for supervisors of bridges and buildings; the same increase will be given to master carpenters who have heretofore received a monthly salary and have been classed as officials. The increase is retroactive to June 1.

Electric Car Lighting Specifications

THE UNITED STATES Railroad Administration has recently issued specifications governing the electric lighting for the United States standard equipment. These specifications were formulated by a committee of six electrical engineers working in connection with a subcommittee from the committee on standards for cars and locomotives of the Railroad Administration. The subcommittee consisted of W. H. Wilson of the Northern Pacific, John Purcell of the Atchison, Topeka & Santa Fe, and J. J. Tatum, general supervisor freight car repairs of the Railroad Administration. The committee of electrical engineers was made up of Ernest Lunn, chief electrician of the Pullman Company; J. R. Sloan, car lighting engineer of the Pennsylvania; L. S. Billau, assistant electrical engineer of the Baltimore & Ohio; A. E. Voigt, car lighting engineer, Santa Fe; E. W. Jansen, electrical engineer, Illinois Central, and E. Wanamaker, electrical engineer of the Rock Island. A large number of the M. C. B. Standards were followed. The specifications are given in full below.

SPECIFICATIONS FOR ELECTRIC LIGHTING OF U. S. STANDARD CAR EQUIPMENT.

General.—Cars shall be lighted by means of a nominal 30-volt belt-driven axle generator system. The battery boxes and axle generator equipment shall be so installed as to permit safe operation of the cars in third rail electric zones.

Axle Generator (Capacity).—The axle generator shall be of a nominal 2 kw. capacity, with 45 amperes net output. It shall cut in at a train speed not to exceed 15 m. p. h. and shall deliver its full rated net output at train speed not to exceed 20 m. p. h., and shall be safe to operate both mechanically and electrically at an r. p. m. equivalent to a train speed of 75 m. p. h., with 33 in. diameter car wheels, and with the pulley sizes as specified.

Armature Pulley.—The armature pulley shall be of malleable iron and be 8 in. in diameter; all other details to conform to M. C. B. recommended practice, as shown on the top figure of sheet U-11 in volume 51 of the M. C. B. Proceedings.

Axle Pulley.—The axle pulley shall be, first choice malleable iron, second choice pressed steel, 20 in. in diameter with 10 in. face at base of flanges. Shall have flanges of the same angle of flare as those on the generator pulley, 2 in. in height. The hub shall have a uniform internal diameter of 7½ in. and a length of 6½ in.

Axle Generator Bearing.—The bearings of the axle generator shall be of ball bearing type and of the size known commercially as Number 412.

Axle Generator Air Gap.—The generators shall have an air gap such as to permit an oval shim .05 in. thick and ¼ in. wide being passed between the armature and pole faces at all points.

Armature Shaft.—The armature shaft shall be of chrome nickel steel of an elastic limit 85,000 lb., tensile strength 100,000 lb., elongation in two inches, 17 per cent and reduction in area 35 per cent.

Axle Generator Regulation.—Means shall be provided for automatically preventing the generator from being overloaded and also for automatically controlling the proper charging of the batteries and preventing excessive overcharging. The ampere hour meter system of control shall be used, except where systems are used which prevent excessive overcharging by constant potential means.

Lamp Regulation.—Means shall be provided for maintaining voltage on the lamp circuits within limits of plus or minus one volt within the range of load to be handled at all speeds above the cutting in speed.

Axle Pulley Bushing.—A suitable corrugated pressed steel axle pulley bushing shall be provided having an external diameter throughout its length of 7½ in. and with a face not less than 8½ in. The internal diameter shall conform to the dimensions of the axle as called for on the specifications covering this portion of the equipment.

Axle Generator Suspension and Belt Tension Device.—The axle generator shall be of the body hung type. The horizontal distance between the center of axle and the center of armature shaft, with generator in normal operating position, shall be as close to six feet as the physical limitations of the car will permit. The generator shall be provided with suitable lugs for the application of two ⅝ in. safety chains. These chains shall be of such length that if the generator breaks loose from its fastening it will clear the top of the rail by at least 8 in. The belt tension device shall be designed so as to permit of the following:

(a) Means for proper alinement.
(b) Means of securely locking the axle generator in position when so alined.
(c) Means for providing an approximately constant belt pull in any operating position of the axle generator. The supporting bearings shall be provided with means of proper lubrication, preferably by the compression grease cup.

Method of Determining Capacity of Generator.—All circuits of the axle generator equipment, with the exception of lamp voltage regulator, shall be connected in a normal manner to a dead resistance, with the field resistance adjusted so as to give 40 volts measured on the load side of the generator regulator and with the commutator hand hole covers off and with the generator driven at a r. p. m. equivalent to the minimum full load output speed. No part of the equipment except resistance units, bare copper solenoids, and commutator shall at any time before the expiration of five hours attain an observable rise in temperature in excess of 65 deg. C, and at no time shall the observable temperature of any part of the apparatus (with the above exceptions) exceed 90 deg. C. This is based on A. I. E. E. Class *A* insulation. If the insulation is not impregnated the above temperature values shall in both cases be decreased by 10 deg. C.

Batteries (Capacity).—The capacity of the batteries shall be 200 ampere hour.

Type.—The batteries shall be of the Plante type.

Crates.—The battery crates are to be made of oak, open type, lead lined and fastened together with brass screws or wooden dowels. Asphaltum and roofing paper, mica or sanded surface on both sides, shall be used between the lead linings and the wooden crates. The covers shall be of lead with filler openings as large as permissible. Ventilated lead filler plug shall be used. The posts on the battery elements shall be of the rectangular type. The bushings for the posts shall be of high grade soft rubber. The dimensions of the posts, bushings, filler openings and filler plugs shall be in accordance with the attached blue prints.

Separators.—Except with Manchester type of positive plate combination of hard rubber with wood veneer separators shall be used. With Manchester positive plates single thick wooden separators may be used.

Battery Boxes.—The battery carrying boxes shall be of steel, wood lined throughout. Dimensions of boxes shall be in accordance with M. C. B. Standard practice as printed in Paragraph 10, Page 800, Volume 51 of the M. C. B. proceedings. The location of the boxes on the car shall be as indicated for a 30-volt system on sheet U-4 of volume 51 of the M. C. B. proceedings. The battery compartment doors shall be constructed so that they may be opened without interference with the third rail construction.

Wiring—Conduit—Fuses.—The conduit, wiring and fuses shall be in accordance with M. C. B. practice as given in text and drawings of volume 51 of the M. C. B. proceedings, except that—

(a) The armature field lead from the generator to the car wiring shall be Number 4 AWG.
(b) The field connection from the regulator locker to the connections with the field lead on the axle generator shall be Number 8 AWG.
(c) All other wiring from the battery to the regulator cabinet and from the axle generator terminal box to the regulator cabinet shall be Number 4 AWG. The generator leads shall be encased in 1¼ in. woven canvas hose with rubber lining.

Train Line.—Two train lines shall be provided together with receptacles and one train line jumper and shall be in accordance with M. C. B. Sheet U and text on page 798 of volume 51 of the M. C. B. proceedings.

Lamp Bulbs.—The lamp bulbs shall be 32 volt, 50 watt, S-19 bulb, Number 100 base for center deck fixtures. They shall be 32 volt, 15 watt, S-17 bulb, Number 100 base for door and desk lights.

Lamp Fixtures.—The 60 ft. cars shall be equipped with seven 50 watt lamps on the center line of the ceiling. The 70 ft. cars with eight 50 watt lamps on the center line of the ceiling. A 15 watt lamp shall be located in a convenient position at the desk. A 15 watt lamp shall be installed over the center opening on the inside of each side door.

Junction Boxes, Fixtures and Reflectors.—Junction boxes shall be located at the lamp outlets on the center deck and shall form a part of the lighting fixtures. The reflector shall be of the porcelain white enameled shallow bowl steel type, approximately 12 in. in diameter and designed to be secured and permanently attached to the junction box cover. This cover

shall be securely fastened to the junction box. The lamp at each side door shall be provided with porcelain white enameled steel reflector of the angle type so located as to project the light outwardly through the side door opening.

Circuits.—The center lights shall be operated on two circuits, alternating lamps being connected to the same circuit. The desk light and door lights shall be connected to a third circuit with switches controlling the individual lamps.

Switches.—All circuit switches shall be of the push button type, 15 ampere capacity and to conform with the N. E. Code. The switches controlling the center deck lights shall be installed in the regulator cabinet and in such a manner that renewals may be made without removing the panel board. The switches controlling the desk and the door lights shall be located conveniently adjacent to these lights. In addition a 75 ampere capacity D. P. knife blade type of switch shall be provided on the switch board for controlling the train line circuit.

Locker for Electrical Equipment.—Steel ventilated locker of sufficient size to contain the generator regulating apparatus and switch board panel shall be conveniently located near the desk.

Accessibility of Regulator Parts.—Parts of generator and lamp regulators subject to renewal shall be mounted so they can be replaced without taking down the panels.

Any apparatus or equipment, its location and installation, not specified in the foregoing, but necessary for successful and safe operation, shall be in accordance with M. C. B. practice as given in volume 51 of the M. C. B. proceedings.

Railway Notes from China

PEKING.

A PERSISTENT RUMOR has it that a domestic loan of $50,000,000 is to be floated by the Ministry of Communications for the purpose of purchasing new equipment for several of the important lines. This loan would probably proceed from the funds of large mining interests and other large shippers who find their output reduced because of the lack of locomotives and goods wagons. It is estimated that this amount would be sufficient to take care of the needs of the government railways for ten years to come. The need for this equipment is attested by the fact that locomotives on two important lines have an annual mileage performance 50 per cent higher than that of the United States in peace times, in spite of the Chinese policy to prolong the life of equipment by heavy repair in order to save costs of freights on new units. The Peking-Hankow has withdrawn a through passenger train from Peking to Hankow for lack of cars, and in spite of wasteful use of equipment by the military, goods wagon performance is two or three times as high as the old peace time record in the United States. Irrespective of the success of these negotiations the Peking-Mukden is reported to have ordered ten new Pacific types from an American builder and the Peking-Suiyuan and the Tientsin-Pukow are negotiating for as many more. If the loan goes through, these orders will probably be merged into the general scheme in order to assist in producing uniformity of design. There are possibilities that all of the rolling stock ordered under the proposed arrangement will be retained by the ministry as a central supply and will lead to the gradual pooling of all locomotives and cars on the contiguous portions of the government system. Under such conditions, the question of uniformity of design becomes all-important to the ministry and to the builders.

* * *

A hitch has occurred in the arrangements with the Fu Chung Corporation whose loan to the Ministry of Communications for the purchase of 55 cars and two locomotives to be used on the Taokow-Chinghua line has been reported hitherto. It appears that the corporation now insists that these cars shall be for the exclusive use of the Taokow-Chinghua line which serves the mines of the corporation. This is considered worth sufficient to the corporation that it will reduce the interest rate on the loan from 8 per cent to 4 per cent in exchange for the guarantee. But this, the Ministry of Communications is unable to ensure, for the cars must go over the Peking-Hankow line to the principal market, which will put the cars into the soldier infested region, with results to the wagons which are easily foreseen. On the other hand, the Peking-Hankow is too short of cars to make good such losses by exchange of equipment. Hence a practical *impasse* has been reached.

* * *

The transfer of the Harbin-Changchun section of the Chinese Eastern line from Russia to Japan, which was announced a short time ago, brought forth an immediate official denial from the Japanese authorities. The tilt between newspapers and Japanese foreign office had scarcely warmed up before official reports from Russian sources and Reuter's confirmed the truth of the transfer. The Chinese Government immediately lodged a protest because the transfer had been made without permitting China to become a party to the proceedings. Curiously, the Japanese press immediately began to stress a report that United States interests had secured control of the Trans-Siberian lines,—reviewing the old report of Harriman's vision of a line around the world, and pointing out the continued presence of American officials and staff upon that line.

The through traffic arrangements which have existed for a short time between the Canadian Pacific and the China-Japan through-traffic system was made the subject of discussion at the recently concluded conference, with a view toward including other trans-Pacific lines and their trans-continental connections. A tentative plan was drawn up which requires only the agreement of the steamship lines to make it effective.

* * *

The Peking-Hankow line is engaged in a race against time to make its extensive bridge repairs before the flood season arrives. Heavy rains have already occurred, but this is considered good omen as indicating that the season's rainfall will be sufficiently distributed so as not to overtax seriously the very poor drainage basins. After the floods of last summer 256 openings were made in the line between Paotingfu and Yenching. Some of these were nearly half a mile wide, and at one place carried a span of a truss bridge nine miles down the river. Several other spans are still deeply imbedded in sand, and most of them which were unplaced were so badly wrenched as to make replacement difficult and in many cases impossible.

The line in Hupeh and Hunan which was seriously broken up by the military movements there is reported to be restored sufficiently to carry traffic through.

* * *

There is a report that work will be resumed on the extension of the Lung-Hai line eastward from Hsuchowfu. This is a Belgian line—so-called from the source of the capital. This extension was contemplated from the first, but Yuan Shih Kai expended $20,000,000 of the funds to further his monarchical ambitions and work had to cease. It is a mystery as to where the funds are to be obtained now.

* * *

Because no protection can be had in Sezechuan, the Siems Carey survey parties have been called in. All have arrived at Peking except one, which is on the way. That ends all actual construction work on the railways of China except for a short branch from the Peking-Suiyuan to a coal mine whose output is needed for locomotive fuel. The work is being done entirely by railway forces attached to the maintenance of way department.

Employees of the American Railway Express, to the number of 125,000, including messengers, clerks, drivers, freight handlers and porters, have filed a complaint with the War Labor Board asking for higher wages, shorter hours and better working conditions. The Railroad Administration recently announced that questions affecting the wages of express employees would be referred to its Board of Wages and Working Conditions.

General News Department

The prohibition of smoking in Chicago suburban trains imposed on account of the influenza epidemic was removed on November 6.

The St. Louis & Hannibal announced on November 1 the resumption of regular passenger train service after a suspension of three weeks because of a strike.

Quicksilver, to the value of $45,000, is reported to have been stolen from a car in the yard of the Erie Railroad at Jersey City, N. J., last May. This statement, published in New York papers, is said to have been given out by the consignee of the mercury who, discouraged at the delay in getting satisfaction, concluded to give the facts to the public. The police have thus far had no success in their search for the thieves.

Car Interchange Rule Modified

At the suggestion of the mechanical department of the Railroad Administration, the Master Car Builders' Association has modified its rule 3-I, which provided that after October 1, 1918, all wooden cars of less than 60,000 lb. capacity, having short draft timbers, would not be accepted in interchange. An investigation was made to determine how many cars such a rule would cut out of joint service and it was found that on the first of this month there were 58,188 such cars of which 40,514 were box cars. The rule was modified to change the effective date to October 1, 1920.

Double Track Operation of the Southern Pacific and the Western Pacific

As announced by the Railroad Administration during the summer, arrangements have been made for the operation of 182 miles of the parallel lines of the Southern Pacific and the Western Pacific in Nevada as double track, and the various physical changes required to make this plan feasible, are now practically complete. The new double track district extends from Weso, two miles east of Winnemucca, eastward to Alavon, four miles west of Wells. In this distance the two roads are for the most part close together and nowhere more than five miles apart. The lines cross at only one point, at Palisade, where the grades are separated. The two lines follow a location along the south channel of the Humboldt river with grades ascending from west to east, the ruling grade of the Western Pacific being 0.4 per cent against eastbound traffic and that of the Southern Pacific 1 per cent.

The advantages to accrue through this arrangement include a more expeditious movement of trains, avoidance of congested conditions and increased safety, and since the Western Pacific line will be used for the eastbound movement, a 21 ft. grade instead of a 53 ft. grade opposing Southern Pacific trains moving eastward. The saving in time to be accomplished is estimated at 2 hr. for each freight train and 30 min. for each passenger train. Physical changes required to make this plan possible include the construction of 11 crossover connections and one water station, the total cost being approximately $118,000. As far as conditions will permit one station in each town will be used by both roads. At Carlin arrangements are being made for the trains of both lines to pass through the Southern Pacific yards, and at Elko through the Western Pacific yards. The Southern Pacific station at Carlin and the Western Pacific station at Elko will be used by both lines. At Battle Mountain, where the lines are five miles apart, the highway between the two stations will be improved so that auto stages can be used to overcome the inconvenience of the one way movement of trains on each of the lines.

Illinois Railroads More Heavily Taxed than Other Property

In a statement submitted to the State Board of Equalization of Illinois on behalf of the Chicago & North Western on October 22. T. A. Polleys, tax commissioner of the road, asserts that Illinois railroad property is taxed on the basis of a higher percentage of its true value than is other property in the state. According to well recognized methods, he arrived at an estimated true value of real estate in Illinois of $10,929,069,000. The total full-value assessment of all real estate of the state of Illinois, as equalized by the board in 1917, was $5,374,247,661, which is equal to 49.17 per cent of the current true value.

According to seven distinct and recognized methods of estimating the aggregate current market value of the Illinois railroad property subject to ad valorem taxation, Mr. Polleys found a maximum valuation of $1,101,277,000 and a minimum of $751,348,000. The average of the seven separate estimates of the current market value is $937,829,000. The total full value assessment made by the Board of Equalization against all ad valorem railroad mileage of the state in 1917 was $606,723,882, or 64.69 per cent of the composite estimated true value just stated. This percentage is 15.52 per cent greater than that represented by the ratio of the assessment of other real estate in the state to its true value.

At the conclusion of his statement, Mr. Polleys says:

"There seems to be no reasonable doubt that railroad property as a whole in Illinois is assessed at a very much higher ratio of its true value than is true as to taxable real estate. Certainly nothing should be added to such railroad assessments at this time; very appropriately they might be reduced. The taxes to be paid by Illinois railroads under the assessment now being made by this board will be borne by the federal government and not by the private owners of the railroads. The government has transmitted to each member of the board a written communication urging that, in this year's assessment no increase be made and that reductions be granted where the same are justified and consistent under the circumstances. The government is asking at your hands no mere act of favor; it is asking for justice, and justice only. It is asking that the railroads of the state, now under government control, be valued for taxation upon substantially the same basis of valuation which prevails as to real estate. It is asking for that equality in taxation which is guaranteed by the constitution of your state and which the decisions of the highest tribunal of your state have repeatedly declared should not and cannot be denied."

Fresh American Beef for the Men in the Trenches

On September 20, an American captain ate a meal on the battle front in France and was so impressed with the excellent quality of the beef which he ate that he made inquiry as to where it came from. He discovered that it was American beef and he got the shipping tag which accompanied it. He sent this to his wife in Chicago and investigation upon her part disclosed the following facts:

The beef which he ate had been killed in Kansas City, Mo., and on July 10 was put into a chilling plant there. It was shipped on July 16, and was placed in a freezer plant in Detroit, Mich., on July 20. It was shipped from Detroit, frozen, on August 13, and was served in an officers' mess in France on September 20.

Immense quantities of beef are handled in this manner. When one considers that the daily beef ration overseas for one million men amounts to 875,000 lb., and that the entire supply of beef for American troops and a good share of the supply for the allied troops comes from the United States, the stupendous task of the War Department and the railroads is apparent.

Large quantities of this meat are bought by the War Department in Chicago. As the volume of the business grew, trouble was frequently encountered as the result of improper icing and of the delayed movement of loaded cars within the Chicago terminal district. During the warm weather of the past summer, considerable beef deteriorated, and some was entirely lost. For the purpose of eradicating these difficulties the Chicago terminal manager appointed a corps of traffic supervisors. Concerning these supervisors, R. B. Robertson, assistant chief of the Chicago branch, Inland Traffic Service, War Department, says:

"Their work has been so thorough that the entire movement, commencing with the ordering of cars, the initial icing, switching of empties to freezer plants and the loading, topping and tamping; and the switching of the loaded cars to the assembling yards of the road haul carrier for forwarding East is handled very smoothly."

The supervisors take note of the manner of loading and the condition of the beef, and particularly of the manner in which cars are pre-cooled and re-iced, and see to prompt billing notification to the carrier line; and they follow the cars to the road-haul train. They also look after beef purchased by the British Ministry of Shipping. Cars containing this beef are consolidated in solid trains and the average time from Chicago to New York is between three and four days.

Hearing on Railway Mail Pay Case

Hearings in the railway mail pay case, in which the Interstate Commerce Commission is to determine reasonable rates for the transportation of mail by railways and prescribe the basis, space or weight or otherwise, for computing railway mail pay, were begun before Attorney-Examiner G. N. Brown at Washington on November 4. The post office appropriation law of 1916 prescribed a space system of computing railway mail pay, and rates based thereon to be substituted experimentally for the weight system, and authorized the postmaster general, with the approval of the commission, to put it into effect on certain routes to enable the commission to determine the proper method and rates. The postmaster general put the plan into effect on November 1, 1916, on nearly all of the mail routes; and a large part of the intervening time has been taken up by the post office department and the railways, represented by the Committee on Railway Mail Pay, in collecting and preparing statistical evidence. The commission's decision, when rendered, will be made retroactive.

When the law providing for the system of paying the railways on the basis of the footage of car space authorized instead of the tonnage basis was passed it was declared by its sponsors that it would increase the payments to the railways; but it has had the effect of reducing the total by about $12,000,000 a year. The railroads have protested against the rates as being too low, and have also objected to the plan as being impracticable from the operating standpoint and because it did not compensate the roads for all the space used.

Exhibits were introduced at the hearing on behalf of the post office department showing that on April 30, 1918, the compensation to the railways for carrying the mails was at the rate of 10 cents per ton mile. It was also shown that the annual miles of service of cars carrying mails authorized on the space plan had been reduced from 577,867,985 on November 1, 1916, when the space system was inaugurated, to 541,943,368 on June 30, 1917; to 510,486,407 on March 31, 1918, and to 504,961,489 on June 30, 1918, while the annual rate of compensation to the railroads had been reduced during that time from $64,447,982 to $52,182,052.

Superintendent Gaines of the eleventh division of the railway mail service of the post office department, testified that the amount of service required of the railways had been reduced by making a more efficient use of the space, by closer supervision to prevent authorizing a greater amount of space than is needed, and in part by reducing the amount of distribution of mail in railway post office cars by performing that service after arrival at terminals and using storage cars in place of the R. P. O. cars, thereby putting into one car as much mail as could be put in three cars equipped with the distributing facilities. A standard R. P. O. car he said has a capacity for 240 sacks of mail if equipped with the distributing racks and of 900 without them. He asserted that the changes had not resulted in impairment of the postal service and that they gave to the carrier full pay for the service performed while giving the government all the service for which it paid. Under cross-examination, however, Mr. Haines admitted that railroads are not always paid for all the space where they find it necessary to run a 30-foot apartment car over a route on which only a 15-foot car is authorized, because they know that a 30-foot car will be required to handle the additional mail at a junction point farther along.

The hearing was adjourned until January 7.

Loading Records in Central Western Region

The railroads in the Central Western region showed marked increases in the loading of grain, coal and livestock in the month of October. The number of cars of grain loaded was 33,418, an increase of 4,596, or 15.9 per cent, over October, 1917; 183,380 cars of coal were loaded, 24,461, or 15.5 per cent, more than during the same month last year. The number of cars of livestock loaded amounted to 68,749, which was 4,644, or 7.2 per cent, in excess of the record for October, 1917.

Railway Business Association

Effectiveness of program has required the general executive committee of the Railway Business Association again this year, as in recent years, to postpone the date of the annual meeting, which under the by-laws is to be held, if feasible, in December. The date has not yet been fixed, but will be not earlier than January, in Chicago.

There will be a dinner conforming to whatever suggestions may be obtained from the food administrator; the cost of such dinner to be met by subscription of members for themselves and their invited guests; no officers of railway corporations or officers of the United States Railroad Administration to be invited, the design being to assemble distinctively an audience of railway supply men.

New York Railroad Club

The New York Railroad Club meeting on Friday evening, November 15, will be in the nature of a special fuel conservation rally. Eugene McAuliffe, manager of the Fuel Conservation Section of the United States Railroad Administration, will address the meeting on the broader phases of the work in which his section is engaged. Robert Collett and H. C. Woodbridge, fuel supervisors for the Eastern and Allegheny Regions, respectively, will also speak, as well as a number of the representatives of the Railroad Administration.

Railroad Y. M. C. A. at Glassport, Pa.

On Monday evening, November 3, the Pittsburgh & Lake Erie opened the fifth Railroad Y. M. C. A. building on that system. This road now has one building to every 45 miles of main line. The new building, at Glassport, is three stories in height, the two top stories being used for bed rooms. The restaurant, reading and lounging rooms are on the first floor.

Western Railway Club Meeting

The November meeting of the Western Railway Club will be held in the Crystal room of the Hotel Sherman at 8 p. m. on Monday, November 18. Major E. C. Schmidt will present a paper on the Organization and Work of the Fuel Conservation Section, United States Railroad Administration. The meeting will be preceded by a dinner in the Italian room at 6:30 p. m.

Railway Telegraph Superintendents

The Association of Railway Telegraph Superintendents will hold its annual convention at the Hotel Sherman, Chicago, on December 5 and 6. This will be the first annual meeting since 1916, the convention last year having been postponed on account of war conditions.

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR, 1918

Name of road.	Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Carolina, Clinchfield & Ohio	282	$2,620,675	$295,745	$2,965,102	$376,595	$702,273	$79,018	$980,837	$104,924	$2,241,668	75.60	$723,434	$118,400	$605,630	—$443,605
Central of Georgia	1,918	8,182,359	3,730,330	13,204,582	1,919,027	2,337,821	266,957	5,053,382	403,364	9,983,560	75.61	3,221,024	514,680	2,703,057	558,372
Central of New Jersey	684	21,302,997	5,090,591	28,842,119	2,377,067	6,222,927	216,250	13,126,582	591,634	22,689,466	78.66	6,152,654	1,376,665	4,771,255	—1,815,795
Central New England	301	3,638,786	196,378	4,004,845	690,929	647,615	10,877	2,060,007	59,579	3,423,081	85.47	581,764	142,400	439,195	—752,809
Central Vermont	411	2,376,082	538,372	3,258,982	475,429	722,856	66,384	2,029,003	96,474	3,399,796	104.32	—140,814	142,560	—283,529	—699,626
Charleston & Western Carolina	342	1,279,168	416,062	1,792,607	277,155	249,627	33,248	839,388	38,423	1,437,842	80.20	354,765	72,000	282,603	—123,512
Chesapeake & Ohio Lines	2,479	33,647,697	8,098,293	44,560,790	5,797,513	10,607,132	346,652	16,266,440	631,370	34,663,994	77.79	10,496,796	1,218,184	9,276,850	—59,313
Chicago & Alton	1,050	10,590,663	3,637,389	15,234,095	2,036,385	3,445,376	233,848	6,488,665	319,662	12,606,047	82.74	2,628,046	489,617	2,136,804	—1,467,679
Chicago & Eastern Illinois	1,131	12,939,650	2,501,559	16,691,993	2,118,647	5,577,928	188,800	6,943,411	432,242	15,316,720	91.76	1,375,272	621,982	749,807	—1,737,900
Chicago & Erie	269	5,562,343	501,442	6,643,206	1,243,143	1,407,353	117,616	3,472,770	175,844	6,431,385	96.81	211,822	292,867	—81,091	—1,434,167
Chicago & North Western	8,090	52,594,332	18,039,662	78,082,132	11,825,489	16,487,116	698,449	36,728,386	1,696,800	67,888,099	86.94	10,194,032	3,360,000	6,811,478	—7,942,507
Chicago, Burlington & Quincy	9,373	64,112,669	18,112,985	90,015,509	12,471,307	17,346,144	853,032	35,973,506	2,187,177	69,806,048	77.54	20,209,461	3,908,539	16,300,923	—8,121,269
Chicago Great Western	1,496	8,127,458	3,149,401	12,216,138	1,954,769	2,783,772	289,376	5,328,996	328,295	10,792,984	88.35	1,423,153	445,110	974,502	—1,110,476
Cincinnati, Indianapolis & Western	321	1,482,619	359,953	2,027,501	290,567	612,637	54,635	996,632	86,689	2,043,760	100.80	—16,259	80,821	—97,080	—409,268
Chicago Junction	12	.....	.....	2,393,650	403,200	344,162	6,431	1,568,106	56,263	2,586,093	107.82	—186,444	18,685	—205,129	—459,975
Chicago, Milwaukee & St. Paul	16,305	57,665,106	15,166,321	80,980,099	10,771,277	20,632,175	905,765	39,031,693	1,928,116	73,444,431	90.69	7,535,669	4,127,204	3,364,849	—12,317,388
Chicago, Rock Island & Gulf	474	1,951,211	735,060	2,865,265	387,784	469,038	63,685	1,077,716	84,558	2,095,369	73.13	769,866	105,239	664,323	10,274
Chicago, Rock Island & Pacific	7,795	41,172,770	17,527,136	62,861,462	8,774,595	15,578,313	852,038	27,258,164	1,557,420	54,305,004	86.38	8,506,459	2,718,608	5,830,464	—4,794,300
Chicago, St. Paul, Minn. & Omaha	1,749	10,224,779	4,047,047	15,332,701	1,764,555	2,886,894	182,241	7,566,543	414,547	12,920,104	84.26	2,412,597	824,869	1,585,332	—1,270,860
Chicago, Terre Haute & Southeastern	374	2,870,894	166,222	3,105,899	357,344	1,114,304	33,719	1,211,022	70,579	2,812,454	90.55	293,445	116,000	177,445	—330,769
Chicago, Indianapolis & Louisville	657	4,693,145	1,569,024	6,860,862	767,123	1,806,597	132,652	2,907,557	198,912	5,817,599	84.79	1,043,263	254,403	788,221	770,193
Chicago, Peoria & St. Louis	247	1,207,209	172,589	1,456,267	213,881	440,940	34,982	802,193	58,728	1,550,724	106.49	—94,457	61,203	—155,660	—325,363
Cincinnati, New Orleans & Tex. Pacific	337	6,514,801	2,641,494	9,819,044	831,160	2,678,493	188,682	3,850,347	188,575	7,770,536	79.14	2,048,508	305,749	1,743,013	—809,643
Cincinnati Northern	245	1,535,343	122,224	1,722,698	272,942	495,637	26,617	681,170	36,513	1,510,669	87.69	212,029	97,731	114,237	—228,937
Cleveland, Cincinnati, Chic. & St. Louis	2,390	30,614,289	9,811,651	44,319,039	4,484,429	7,984,930	629,527	17,834,507	789,963	31,972,852	72.14	12,346,187	2,777,134	9,564,793	1,249,611
Coal & Coke	197	706,064	171,569	913,606	223,932	341,093	11,806	442,106	35,200	1,054,137	115.38	—140,532	40,000	—180,531	—255,293
Colorado Midland	337	834,973	102,338	981,547	279,293	185,225	39,048	586,696	37,862	1,132,732	115.40	—151,185	54,912	—206,098	.....
Colorado Southern	1,101	6,091,415	1,391,287	7,987,590	943,896	1,738,173	73,568	2,890,613	281,579	5,939,875	74.36	2,047,724	376,000	1,670,976	—643,721
Colorado Wyoming	42	232,192	19,425	751,989	75,918	127,416	1,079	321,297	34,666	560,376	74.51	191,612	29,944	161,659	—141,204
Cripple Creek & Col. Springs	116	534,690	86,030	635,899	57,209	85,395	8,071	212,510	24,419	387,605	60.95	248,294	59,284	189,006	—173,352
Cumberland Valley	163	2 741,884	487,862	3,484,422	335,592	466,528	40,637	1,289,261	92,594	2,227,781	63.94	1,256,641	72,230	1,183,771	—259,687
Delaware & Hudson Co.—R. R. Dept	878	19,291,423	1,850,530	22,276,983	2,274,280	5,691,985	182,022	10,754,535	700,181	19,755,467	88.68	2,521,518	612,113	1,908,658	—2,420,064
Delaware, Lackawanna & Western	955	31,723,145	6,859,470	43,195,652	3,036,280	8,577,257	508,149	18,638,417	797,221	31,904,497	73.86	11,291,155	1,877,284	9,400,003	—2,271,702
Denver & Rio Grande	2,624	14,714,423	3,245,864	19,061,497	2,636,940	5,082,074	207,044	6,941,511	488,070	15,614,097	81.91	3,447,401	850,000	2,594,815	—2,404,396
Denver & Salt Lake	255	1,122,002	204,163	1,374,931	434,500	494,284	8,053	687,863	31,850	1,656,551	120.48	—281,620	72,021	—353,650	—233,687
Detroit & Mackinac	381	739,472	210,004	1,016,062	167,140	229,683	18,565	447,800	43,674	906,864	89.25	109,199	64,211	43,407	—87,316
Detroit & Toledo Shore Line	80	1,256,206	.....	1,269,091	84,005	153,725	14,191	447,997	31,698	731,616	57.65	537,475	86,499	450,376	—161,060
Detroit, Toledo & Ironton	461	1,795,054	90,469	2,012,403	406,763	608,669	34,200	1,138,258	96,944	2,284,834	113.54	—272,432	71,200	—343,785	561,653
Duluth & Iron Range	284	5,763,354	153,287	6,061,026	820,705	697,221	6,548	1,453,004	104,353	3,088,735	50.96	2,972,291	349,472	2,622,369	1,195,510
Duluth, Missabe & Northern	410	12,452,512	293,310	13,327,616	1,268,636	1,086,197	24,642	2,388,910	333,091	5,112,968	38,36	8,214,648	741,240	7,473,408	3,328,079
Duluth, South Shore & Atlantic	601	2,553,131	669,605	3,116,995	648,431	453,649	58,934	1,506,711	74,179	2,774,957	89.02	342,038	161,271	180,744	—273,845
Duluth, Winnipeg & Pacific	175	927,550	183,642	1,141,834	172,449	191,695	21,367	573,389	46,814	1,008,327	88.30	133,506	62,715	70,791	—278,160
East St. Louis Connecting	3	.....	.....	723,324	96,073	120,201	2,440	561,678	34,832	815,224	112.71	—91,900	17,990	—109,892	—255,065
El Paso & Southwestern Co	1,028	7,790,603	1,616,342	9,844,865	908,728	1,484,751	120,741	2,847,726	259,663	5,682,860	57.72	4,162,005	467,883	3,693,957	—392,929
Elgin, Joliet & Eastern	805	10,481,371	102	12,233,195	1,252,748	2,784,087	55,349	4,668,274	198,816	8,956,789	73.22	3,276,407	406,183	2,870,222	158,388
Erie	1,989	40,994,139	7,622,920	53,857,116	7,100,838	19,288,496	625,457	27,767,677	1,340,053	56,440,666	104.79	—2,583,551	1,855,629	—443,440	—10,352,308
Florida East Coast	765	3,561,028	1,844,969	6,214,149	688,547	840,112	85,878	2,443,445	144,681	4,116,932	66.25	2,097,218	328,214	1,767,452	—836,570
Ft. Smith & Western R. R. Co	253	550,474	193,458	810,688	138,334	217,894	23,559	301,358	45,099	730,557	90.11	86,131	37,500	42,627	15,917
Fort Worth & Denver City	454	3,303,247	1,292,501	4,819,948	469,902	1,060,583	43,517	1,965,946	180,460	3,741,516	77.62	1,078,432	170,432	170,290	907,984
Ft. Worth & Rio Grande	235	430,601	251,756	734,679	136,701	137,414	14,655	338,940	38,059	665,769	90.62	68,909	24,266	44,045	15,928
Fonda, Johnstown & Gloversville	57	222,660	468,862	726,690	71,718	61,472	4,909	248,636	52,789	439,524	60.48	287,166	36,000	251,166	—30,926
Galveston, Harrisburgh & San Antonio	1,365	9,490,344	3,458,321	13,829,624	1,620,719	1,805,350	215,805	5,151,958	407,333	9,238,145	66.79	4,591,478	454,893	4,134,221	—142,808
Galveston Wharf	13	.....	.....	717,612	7,793	10,031	3,115	234,031	4,994	445,625	62.10	271,987	97,900	174,087	—77,268
Georgia	328	2,443,689	1,240,573	3,946,947	297,543	464,573	66,875	1,637,809	103,623	2,571,821	65.15	1,375,126	51,263	1,323,741	742,643
Georgia, Southern & Florida	402	1,360,634	705,110	2,283,023	327,497	548,743	40,889	979,106	81,000	1,987,815	87.06	295,208	108,839	185,638	—28,793
Grand Rapids & Indiana	569	3,061,249	1,157,386	4,607,412	618,924	1,023,266	80,152	2,130,948	159,173	4,022,135	87.29	583,277	184,164	400,277	—237,004
Great Northern	8,258	42,287,290	10,184,721	57,598,909	10,954,403	11,069,768	589,142	26,672,744	1,116,828	50,931,566	88.42	6,667,342	3,878,840	2,783,632	11,786,130
Gulf & Ship Island	307	1,194,742	423,448	1,748,488	311,152	319,395	30,881	569,388	82,382	1,313,770	75.13	434,718	84,076	350,121	—52,845
Gulf, Colorado & Santa Fe	1,937	8,028,248	3,329,330	12,090,289	2,250,481	1,983,903	184,388	4,360,510	427,403	9,168,969	75.83	2,921,319	557,418	2,360,240	—93,373
Gulf, Mobile & Northern	402	1,202,854	267,392	1,546,855	233,275	320,409	37,525	616,463	74,386	1,282,335	82.89	264,520	91,305	173,205	—228,540
Hocking Valley	349	7,194,625	664,502	8,332,765	915,559	2,214,903	60,433	3,157,692	178,456	6,524,100	78.29	1,808,665	407,150	1,401,401	—453,224
Houston, East & West Texas	191	921,702	323,556	1,318,481	194,584	128,699	14,950	566,968	27,167	932,275	70.71	386,206	51,488	334,417	—84,553
Houston & Texas Central	948	4,021,279	1,399,171	5,812,720	816,971	669,731	95,945	2,256,636	152,064	3,989,446	68.63	1,823,274	287,406	1,533,866	165,412
Illinois Central	4,776	50,641,822	13,015,204	68,422,056	10,635,281	15,681,418	590,573	27,963,566	1,686,650	56,978,951	83.27	11,443,104	3,452,184	7,979,056	—5,270,264
Indiana Harbor Belt	116	.....	.....	3,523,863	801,527	707,148	15,707	2,234,713	100,477	3,859,572	109.53	—335,710	82,891	—418,603	—1,231,802
International & Great Northern	1,159	5,413,327	2,440,953	8,449,385	1,194,363	1,804,208	119,251	3,827,493	303,095	7,226,836	85.53	1,222,549	240,000	980,544	—869,569
Kanawha & Michigan	176	2,860,662	679,527	3,663,732	426,233	857,197	22,504	1,144,347	78,735	2,529,024	69.02	1,134,707	160,661	974,046	425,281
Kansas City, Mexico & Orient	272	654,459	109,426	805,321	155,023	344,308	34,019	442,175	60,531	1,036,056	128.65	—236,735	50,120	—280,855	—210,437
Kansas City, Mex. & Orient of Tex	465	577,683	81,067	675,462	149,063	209,950	24,195	376,097	32,368	791,673	117.20	—116,211	35,000	—151,391	—80,698
Kansas City Southern	774	7,370,994	9,474,181	9,561,842	1,026,598	1,669,173	157,324	3,693,191	312,368	6,853,668	71.67	2,708,173	455,889	2,256,395	—413,210
Lake Erie & Western	900	5,215,191	415,459	5,925,172	764,989	1,407,005	103,559	2,713,207	168,688	5,157,234	87.04	767,938	219,043	548,268	—793,262

Grand Trunk Western Lines—Cumulative figures not available on account of the fact that statements showing operating revenues and other "Standard Returns" have not been received.

REVENUES AND EXPENSES OF RAILWAYS

EIGHT MONTHS OF CALENDAR YEAR, 1918 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Lehigh & Hudson River	96	$1,425,156	$29,995	$1,521,320	$204,631	$288,758	$12,794	$708,528	$42,021	$1,256,932	82.62	$264,387	$47,600	$216,769	—$264,196
Lehigh & New England	296	2,659,453	11,265	2,831,072	339,884	512,894	47,444	916,230	66,962	1,877,209	66.31	953,863	69,262	884,236	49,074
Lehigh Valley	1,443	33,387,835	4,207,833	40,977,960	4,547,256	10,471,110	493,057	19,919,367	789,438	36,328,136	88.65	4,649,825	1,291,764	3,356,504	—3,785,047
Long Island	398	3,469,005	9,842,465	14,742,531	1,613,428	1,843,390	83,571	6,271,091	338,193	10,251,785	69.53	4,490,746	718,966	3,769,089	907,899
Los Angeles & Salt Lake	1,166	6,067,352	2,436,369	9,196,874	1,240,098	1,897,429	197,259	3,366,212	203,925	7,075,127	76.92	2,121,747	500,997	1,619,582	—1,242,716
Louisiana & Arkansas	362	829,099	249,033	1,127,259	221,239	212,233	26,479	421,723	44,264	925,937	82.14	201,322	87,370	113,857	—75,101
Louisiana Ry. & Nav. Co	356	1,377,298	494,960	1,984,713	316,913	295,764	37,218	829,551	63,631	1,543,076	77.74	441,636	112,000	553,393	303,756
Louisiana Western	207	1,843,432	829,131	2,833,058	228,207	314,452	50,784	727,374	77,981	1,415,891	49.97	1,417,167	108,256	1,307,966	317,750
Louisville & Nashville	5,037	44,578,593	15,330,509	63,377,202	7,742,813	13,378,196	934,438	24,824,773	1,123,383	48,212,711	76.07	15,764,491	1,904,441	13,249,873	111,744
Louisville, Henderson & St. Louis	199	1,238,787	445,328	1,760,713	266,526	251,417	45,439	681,662	36,319	1,284,503	72.95	476,209	30,847	445,159	—42,888
Maine Central	1,216	6,834,154	2,845,567	10,481,259	1,750,625	1,940,473	112,085	5,889,056	329,383	10,051,795	95.90	429,463	571,971	—142,757	—2,118,385
Maryland, Delaware & Virginia Ry. Co	82	394,593	232,814	645,033	55,431	151,947	8,998	428,986	13,661	659,021	102.17	—13,987	11,771	—25,759	111,896
Michigan Central	1,861	28,110,015	10,430,157	42,920,224	4,850,257	8,092,593	520,716	18,174,845	764,283	32,996,900	76.86	9,923,324	1,286,800	8,631,171	1,354,578
Midland Valley	386	1,641,957	467,673	2,194,242	325,496	367,947	21,097	786,765	85,344	1,586,649	72.30	607,594	57,295	550,187	58,724
Mineral Range	100	707,926	18,294	748,520	141,220	184,059	2,445	424,657	9,249	762,628	101.88	—14,108	26,969	—41,077	—28,025
Minneapolis & St. Louis	1,647	5,721,811	1,349,828	7,481,420	1,356,947	1,877,631	114,729	3,769,584	200,370	7,317,806	97.81	163,614	399,521	—238,906	—1,870,324
Min. & International	195	486,909	188,029	715,545	134,828	128,367	3,600	356,327	26,725	649,847	90.81	65,698	39,684	25,967	—179,610
Minn., St. Paul & Sault Ste. Marie	4,237	14,506,981	4,130,279	20,311,452	3,257,181	3,983,254	254,335	9,731,566	567,721	17,980,464	88.52	2,330,989	1,451,194	879,785	—5,708,957
Missouri & North Arkansas	365	585,341	309,976	963,994	227,692	179,514	19,879	393,495	45,976	866,069	89.84	97,934	44,976	48,353	—105,262
Missouri, Okla. & Gulf	332	911,620	219,241	1,188,804	287,629	381,358	19,186	645,974	72,864	1,408,332	118.46	—219,529	70,960	—291,718	—448,086
Missouri Pacific	7,301	39,162,721	12,831,681	56,334,001	9,000,141	10,637,047	797,236	23,178,741	1,355,312	47,175,940	83.74	11,158,062	2,274,961	8,922,137	.....
Mo., Okla. & Gulf Ry. Co	332	911,620	219,242	1,188,804	287,629	381,358	19,186	645,974	72,864	1,408,333	118.46	—219,529	70,960	—291,718	—448,086
Mobile & Ohio	1,149	7,713,234	1,281,412	9,533,751	1,223,481	2,668,170	264,205	4,422,466	285,753	8,864,424	92.97	669,328	344,728	322,574	—1,629,327
Monongahela	108	1,748,741	154,214	1,961,905	439,508	165,129	10,806	681,779	39,116	1,336,339	68.11	625,566	30,066	595,497	36,058
Monongahela Connecting	5	.....	.....	1,545,961	203,534	24,746	3,298	823,256	43,335	1,320,884	85.44	225,077	18,165	206,912	93,416
Morgan's La. & Tex. R. R. & S. S. Co.	400	3,680,589	1,256,668	5,301,979	554,477	606,110	70,412	1,853,804	125,280	3,229,888	60.92	2,072,090	219,338	1,850,594	405,984
Nashville, Chattanooga & St. Louis	1,236	9,003,698	3,694,448	13,438,395	1,477,665	2,639,066	340,450	5,710,828	316,568	10,531,876	78.37	2,906,519	266,672	2,638,844	648,960
Nevada Northern	168	1,554,723	123,274	1,720,016	171 846	210,497	6,589	415,583	41,533	846,937	49.24	873,079	129,009	743,459	—108,542
Newburgh & South Shore	7	.....	—245	842,205	109,042	169,215	.....	404,925	22,156	705,367	83.75	136.838	51,852	84,986	732,563
New Orleans & North Eastern	203	2,775,363	949,424	4,155,303	432,669	865,270	69,214	1,672,259	93,097	3,153,671	75.89	1,001,632	227,513	773,541	5,386
New Orleans Great Northern	284	1,095,748	292,600	1,453,778	200.523	231,055	25,892	491,315	61,073	1,012,424	69.65	441.353	67,446	373,543	—14,298
New Orleans, Texas & Mexico	191	946,069	335,035	1,313,236	236,525	271,749	25,075	412,790	51,652	998,197	76.01	315,039	24,400	290,254	38,040
New York Central	6,079	113,662,251	43,237,080	180,114,566	21,200,018	41,032,647	1,888,516	80,002,203	4,428,156	150,972,301	83.82	29,142,266	8,166,646	20,956,278	—13,434,770
New York, Chicago & St. Louis	571	11,663,066	1,320,059	13,403,856	1,603,061	2,334,633	277,295	6,039,657	357,096	10,640,644	79.38	2,763,212	402,500	2,360,581	247,252
New York, New Haven & Hartford	2,003	32,867,344	25,131,194	65:695,038	7,919,722	12,960,738	318,219	30.471,722	2,063,475	54,806,103	83.42	10,888,936	2,217,000	8,663,334	—5,303,014
New York, Ontario & Western	567	4,811,965	1,590.054	7,373,590	916,792	1,549,993	74,218	3,497,420	171,411	6,209,834	84.21	1,183,756	172,848	1,010,690	—664,925
New York, Philadelphia & Norfolk	121	3,456,066	780,380	4.631.075	387,748	950,743	81,383	2,163,088	88,625	3,779,503	81.61	851,573	121,152	730,334	—137,133
New York, Susquehanna & Western	135	2,106,361	399,204	2,740,337	298,335	491,757	18,157	1,636,808	58,973	2,503,914	91.37	236,423	119,333	116,989	—348,185
Norfolk & Western	2,082	43,027,909	6,393,220	51,310.742	6,088.826	13,091,773	423,647	18,341,676	945.578	38,995,512	75.99	12,315,230	2,104,000	10,202,032	—3,930,710
Norfolk Southern	907	2,450,527	964,415	3,633,268	631,618	753,160	56,005	1,688,899	158,271	3,288,805	90 51	344,463	126,541	217,825	—851,867
Northern Pacific	6,592	44,433,162	11,112,334	60.302,799	9,396,662	9,401,479	574.547	23,701,070	1,164,124	44,517.599	73.82	15,785,200	4,224,069	11,556,888	—7,865,014
Northwestern Pacific	507	1,883,856	1,475,400	3,732,458	509,955	435,380	38,189	1,378,209	82.603	2,456.078	65.80	1,276,380	174,877	1,101,471	177,777
Oregon Short Line	2,316	15.709.150	4,073 544	21,334,800	2,934,330	3,064,519	191,939	6,243,217	672,053	13,502,898	63.29	7,831,902	1,262,032	6,567,976	—1,073,690
Oregon-Washington R. R. & Nav. Co	2,065	10.822.514	4,278,885	16.685,085	2,428,962	2,130.253	262.987	6,467,266	661,354	12,260,323	73.48	4,424,762	987,728	3,435,993	—449,206
Panhandle & Santa Fe	772	2,755,443	936,803	3,880,693	694.125	895,341	35.044	1.421,328	117.555	3,142,248	80.97	738,445	143,107	594,416	—1,082,401
Pennsylvania Company	1,754	41,912,708	10,109,655	57,670,586	9,138,864	14,215,586	668,707	26,878,519	1,360,614	52,673,146	91.33	4,997,439	2,309,448	2,687,863	—5,959,192
Pennsylvania Railroad	5,342	144,595,977	60,323,313	226,180.291	29,434,813	58,441.748	2,045,052	105,434.246	15,288,068	204,050,884	90.21	22,129,407	6,951,366	15,157,149	—22,638.448
Peoria & Pekin Union	19	165,538	49,802	828,354	103,457	158,701	288	606,919	31,896	901,260	108.80	—72,906	75,769	—148,676	—179,648
Pere Marquette	2,248	13,334,033	2,675.217	17,624,281	2,428,717	4,011,974	249,485	7,815.309	493,496	15.030,090	85.28	2,594,191	454,378	2.138,557	1,483,211
Philadelphia & Reading	1,126	43,215,598	5,461,475	52,010,622	4,364,000	11,430.761	347,664	24,447,809	902,836	41,608,005	80 00	10,402,616	1,093,506	9,308,947	3,758,216
Pittsburgh & Lake Erie	224	17,797.126	1,486,299	20,660.674	2.809,525	4,249,203	127,147	6,504,745	335.495	14,067,626	68.08	6,593,048	591,200	6,001,843	893,024
Pittsburgh & Shawmut R. R. Co	94	855,539	31.601	896,971	205.811	222,671	9,515	352,527	27,158	817,682	91.16	79,289	28,042	51,247	—134,830
Pittsburgh, Shawmut & Northern	204	816,955	43,372	881.923	240.084	406,662	10.165	526,594	56,644	1,241,148	140.61	—358,225	14,558	—372.783	—229,616
Pittsburgh & West Virginia	63	1,067,123	73.849	1,244,026	275,096	318,835	10,307	453,910	58,451	1,178,036	94.69	65,991	106,954	—40,963	.....
Pittsburgh, Cinn., Chic. & St. Louis	2,395	37,038,242	11 950.613	54,856.567	6,744,758	14,628,468	729,448	24,512.577	1,356,292	48,460,512	88.34	6,396,055	1,872,520	4,522,477	—5,729,046
Port Reading	21	1,132,372	.....	1.563,784	167,231	112,231	298	842,156	11,557	1,133,358	72.47	436,426	77,667	352,760	37,474
Rutland	415	1,749,809	738,967	2,948,242	466.047	596,395	84,844	1,515,890	74,614	2.740.850	92.96	207,392	141,514	65,851	—486.758
Richmond, Fredericksburg & Pot	87	1,754,459	1,975.585	4 127.794	218.108	472,348	33,548	1,523,813	78.995	2,364,703	57.28	1,763,091	107,151	1,655,590	412.686
St. Joseph & Grand Island	258	1,393 038	246,997	1,744.759	340,844	308,266	18,834	896,889	65.041	1,634.970	93.71	109,789	68,852	40,913	—28,875
St. Louis, Brownsville & Mexico	548	1,777.458	749,475	2,714,349	415,367	536,898	60,906	851.642	108.565	1,973,312	72.69	741,037	79,556	660,460	—284,791
St. Louis-San Francisco	4,761	27,493,263	3,364,200	43,462.857	6,340,952	10.260,980	410,476	17,207,079	1,243,728	35,416,857	81.48	8.046.000	1,830,950	6,204,826	—5,126,114
St. Louis Southwestern	968	6.512,528	1,651,406	8,520,941	918,851	1,466,677	204,059	2,498,927	276.028	5,388,189	63.23	3,132,752	386,087	2,751,585	—141,518
St. Louis Southwestern of Texas	814	2.968,898	1,239.504	4,496,880	924,674	1,062,246	95,252	2,054,908	191,577	4,328,601	96.25	168,280	156,225	11,660	—109,663
San Antonio & Aransas Pass	732	1,667,493	747.615	2,599.812	436,009	832,551	55,255	1,423,426	129.719	2,875,139	110.59	—275.327	12,000	—396,920	—439,315
Seaboard	3,560	14,001.604	8,469,324	24,633,261	2,899,784	5,695,554	537,484	10,688,792	696.841	20,689,564	83.99	3.943.697	977,908	2,958,402	—1,840,211
South Buffalo	3,555	386.132	.....	1.050,791	109,802	126,591	2,718	551,944	14,868	805,923	76.69	244,867	11,200	233,667	5,103
Southern	6.982	46,301.983	26,952,871	79,715.756	8,691,789	15,454,699	1,070,469	30,307.506	1,693,416	57,703.282	72.38	22,012,474	2,474.375	19,503,369	3,561,083
Southern in Mississippi	278	480,358	316.345	867,378	198,986	93,411	18,975	462,697	35.968	810.036	93.42	57,342	72,000	—14,669	—81,524
Southern Pacific	7,102	62,203,604	26,092,153	96,710,305	11,915,966	16,833,303	1,067,885	38,888,580	2,098.619	72,442,126	74.91	24,268,179	4,068,799	20,176,432	—7,831,063
Spokane, Portland & Seattle	554	3,581,299	1,409,694	5,332,617	601,002	502,517	48,518	1,627,360	148.075	2,962,713	55.56	2,369,904	555,406	1,814,024	—50,890

Traffic News

The Federal Express now has a sleeping car nightly from New Haven to Washington and one from Washington to New Haven.

To relieve the congestion of Sunday travel between Baltimore and Norfolk, Newport News and Old Point Comfort the Railroad Administration has put on Sunday-night boats. Steamers of the Chesapeake Steamship Line will alternate with those of the Baltimore Steam Packet Line.

A total of 525,334 cars of grain have been loaded by the railroads up to October 26 this year, as compared with 388,175 during the corresponding period of 1917. Grain loading for the week was 28,249 cars, as compared with 24,994 during the corresponding week of 1917.

The new consolidated ticket offices of all roads under federal control situated in the loop district of Chicago were opened on November 4, in the Insurance Exchange building, at 161 West Jackson boulevard. L. H. McCormick, formerly general agent, passenger department, of the Rock Island lines at Chicago, has been appointed manager in charge of the section of the ticket office occupied by the western roads, and C. C. Clark, formerly assistant general passenger agent of the Michigan Central at Chicago, manager of the eastern and southern lines section.

State Commissions Asked to Study Proposed New Class Rates

Charles E. Elmquist, secretary and Washington representative of the National Association of Railway and Utilities Commissioners, has sent a letter to all state commissions regarding the plan of the Railroad Administration for standardizing class freight rates. He urges them to give to the Interstate Commerce Commission the benefit of their criticisms or suggestions. The letter says:

"We may assume that it is the present intention of the Railroad Administration to put a standard scale of class freight rates into effect within the different zones that may be created. The standard scale will eliminate all state class rates as well as all present interstate class rates, and may vitally affect commodity rates. The Interstate Commerce Commission has not decided upon a course of procedure for the investigation of these rates. If it decides to proceed in the matter, it should have the benefit of criticisms and suggestions of state commissioners upon the effect of the rates as well as upon the manner of making the investigation.

"It is advisable, therefore, for the state commissions promptly to examine the proposed scale of rates for the purpose of determining:

1. Whether the same will produce an increased revenue.
2. The per cent of increase or reduction in the present class rates.
3. The per cent of increase over the class rates applying prior to the effective date of order 28.
4. The necessity for continuing existing commodity rates.
5. Whether the standard scale has any relation to the operation of the railroads as a war measure.
6. Whether it is advisable at this time to attempt any such far-reaching readjustment of rates, regardless of their amount.

"State commissions and the shippers of the country are facing a condition and not a theory. If the Railroad Administration is finally to adopt standard class rates, it is important for the commissions and the shippers to give the Interstate Commerce Commission all the information that they can secure, and also the best constructive criticism that can be brought to bear upon the question. This should be done regardless of the legal questions involved. The commissions have here an opportunity to give to the public the benefit of their knowledge of rates and local conditions. It now looks as if the war would soon be over, and suggestions should be made with due regard to the fact that the railroads will soon be again operated in times of peace."

Influenza Reduces Coal Production

The influenza epidemic continued to decrease seriously the production of bituminous coal in the week ended October 26, the output being 309,000 tons or 2.7 per cent less than in the preceding week. Shipments from a number of districts also decreased in that period, according to data furnished by the Geological Survey. The output, including lignite and coal coked, was estimated at 11,215,000 net tons, as compared with a production of 11,524,000 net tons for the week ended October 19. An increase of 411,000 tons is shown over the corresponding period of 1917, when production reached 10,804,000 net tons. The decline in production during the last few weeks now makes necessary an average daily production in the remainder of the coal year of 2,047,000 net tons, an increase over the daily requirements of about 1.6 percent and over the average daily production for the coal year to date, 1,988,000 net tons, or 3 percent.

Production of anthracite in the week ended October 26, estimated at 1,714,000 net tons, is exactly the same tonnage as produced in the preceding week, although it is a decrease of 339,000 net tons, or 17 percent, from the production in the corresponding week in 1917. The daily average production in the last week is estimated at 286,000 net tons as compared with 334,000 net tons for the coal year to date and with 332,000 net tons in the corresponding period of 1917. From April 1 to date, the total production is estimated at 59,087,000 net tons, as compared with 58,789,000 net tons in 1917, an increase of 298,000 net tons, or .5 percent.

In the week ended October 19, the total loss by all causes from 100 percent production was 20.6 percent, of which car shortage comprised 7.6 percent, labor shortage 8.5 percent, mine disability 3.0 percent and all other causes 1.5 percent.

Total coal loading on the railways during the week ending October 16 was 236,605 cars, as compared with 219,127 during the corresponding week of the previous year. The increase in 1918 up to October 26 is estimated at 724,978 cars.

War Emergency and Reconstruction Conference

Preliminary plans for the War Emergency and Reconstruction Conference of War Service Committees to be held at Atlantic City, December 4, 5 and 6, are announced by the Chamber of Commerce of the United States.

Reconstruction will be given a prominent place on the program.

The conference will be divided into groups at three sessions, the first to be held on the evening of December 4, the second on the afternoon of December 5, and the third on the evening of the same day. On the evening of December 4 each war service committee will meet with its chairman to consider the problems of reconstruction as they affect that particular industry as well as to take up other problems which the war has demonstrated are vital to industry. On the afternoon of December 5 the war service committees will meet in groups which are related as to their use of basic materials and as to their distribution problems, etc. With these groups will meet the commodity or section chiefs of the War Industries Board. Related groups will form themselves into ten major groups on the evening of December 5 to take up the question of raw materials, price control and subjects arising from related group meetings. After the general meetings of the committees of the related groups and of the major groups it is hoped there will be presented definite recommendations covering the reconstruction period, with the possibility of creating an executive committee empowered to gather data and to function with industries to meet the many problems that the nation's industries will be called upon to solve with the end of the war.

RAILWAY CARS OF REINFORCED CONCRETE.—The London Times reports that experiments are being made at the plant of the Ebbw Vale Steel Company in the construction of railway cars of reinforced concrete.

Commission and Court News

Interstate Commerce Commission

Conference Ruling on Average Agreement

The commission has modified conference rulings 409, 463, and 497 as follows: No average agreement made under the uniform demurrage rules may properly combine in one account the cars of more than one consignee; but an average agreement may be made with a public elevator, warehouse or cotton compress to apply to cars consigned to or handled by such elevator, warehouse or compress, so long as the elevator, warehouse or compress is held strictly responsible to the carrier for the detention of cars and for any demurrage that results from such detention. In pursuing this course carriers must accept full responsibility for the correct application of the rule. (See conference ruling 498.)

Personnel of Commissions

John R. Thompson, senior mechanical engineer for the Interstate Commerce Commission, in the central district of the Bureau of Valuation, Chicago, in charge of mechanical and electrical branches, has resigned to take a commission as captain in the engineer corps of the army. S. A. Chamberlain, senior inspector of motive power of the Commission, at Chicago, has been promoted to succeed Mr. Thompson.

State Commissions

The Public Service Commission of Massachusetts, on a complaint of the National Dock & Storage Warehouse Company, has declared illegal and discriminatory a switching charge made by the Boston & Albany on cars moved from its own pier, at East Boston, to that of the complainant. The decision continues:

"In view of the fact that the Boston & Albany is now under direct control of the Federal Government, which was not in any manner made a party to the proceedings, the commission feels that it is sufficient at present for it to state the facts, and its conclusion with respect thereto, believing that the United States Railroad Administration, when the situation is thus brought to its attention, will effect the desired change. In the meantime the case will be kept open, and the commission will be prepared at any future time to take such further action as may seem appropriate and necessary."

Court News

Injunctions Not Sustained

The United States Supreme Court, in a decision handed down on November 4, declined to review decrees of the lower courts dismissing injunction proceedings to prevent the ousting of the wires of the Western Union Telegraph Company by the Louisville & Nashville Railroad on its right of way. The suits also involved the Western Union's lines along the right of way of the Atlanta & West Point and the Nashville, Chattanooga & St. Louis.

Defect in Apparatus—"Terminal"

A railroad's rule required an engineer to report defects in his engine at terminals. In the case of an undesired emergency setting of air brakes, the South Carolina Supreme Court holds that the defect should have been remedied when the train reached a place where the work could be done, though this place was only a terminal for trains that began and ended their trips there and not for trains merely passing through; and the railroad would be liable for injuries to a conductor when thrown from the top of a car thereby.—Scott v. A. C. L. (S. Car.), 96 S. E. 305. Decided March 25, 1918.

Equipment and Supplies

Additional Steel Probably Available Soon

The prospects of peace and the curtailment of the steel requirements of the Emergency Fleet Corporation, which is already slowing down its activities, are expected to result in a rearrangement of steel requirements which will free additional steel for the use of the Railroad Administration, which will probably be able to place additional orders for cars, locomotives and rails earlier than has been expected of late. Plans have been prepared for some time for refrigerator, stock and general service cars and the orders placed during the spring for 100,000 box and coal cars were less than they would have been if more steel had been available.

Locomotive Deliveries

A total of 58 locomotives were shipped to roads under federal control during the week ending October 26, including 42 of the U. S. R. A. standard types, as follows:

Works	Roads	Number	Type
American	C. & A.	3	U. S. R. A. Mikado
	Erie	7	U. S. R. A. 8-wheel Switch
	T. & P.	11	U. S. R. A. Mikado
	W. & L. E.	6	U. S. R. A. Mikado
	H. V.	3	Mallet
	Erie	4	U. S. R. A. Mikado
	Chic. Junc.	4	U. S. R. A. 6-wheel Switch
	Rutland	4	U. S. R. A. Mikado
	P. L. W.	1	Santa Fe
	Total	43	
Lima	Ill. Cent.	9	Mikado
	Total	9	
Baldwin	Penna.	1	Mikado
	C. C. C. & St. L.	3	U. S. R. A. Mikado
	Union Pac.	1	Mikado
	St. L.-S. F.	1	Santa Fe
	Total	6	
	Grand total	58	

Production of Locomotives

The standard gage steam locomotive industry of the United States, operating under the direction of the War Industries Board, has increased its rate of production approximately 100 per cent in the past three months, according to a statement authorized by B. M. Baruch, chairman of the War Industries Board. During the last week of October the output of the three standard gage companies was 144 locomotives. From 1910 up to August, 1918, the largest number ever turned out in a single year was 3,776, which would represent an average weekly output of 72.6 locomotives. The statement emphasizes the fact that this increase in production has been accomplished without any expenditure to increase plant facilities or enlarge the existing works, but has been made possible by a redistribution of orders and concentration by each of the plants on particular types of locomotives. Last August, the statement says, the government was seriously considering the establishment of government plants to meet the demand for locomotives, at a proposed expenditure of approximately $25,000,000, but at the suggestion of the War Industries Board the expenditure was held up in favor of the plan of redistribution. Apparently the plan of extending government aid for the extension of the plants has also been abandoned. What the statement calls the "Pershing" locomotive, built on standard plans designed for the United States military railways, is said to have been made the sole type of steam locomotive in use behind the American lines in France and also to have been adopted by the British and French governments as the standard type for their armies on the western front; and under the arrangement adopted, the construction of all locomotives of standard gage for use in France was assigned to the Baldwin Locomotive Works, whereas orders for the Railroad Administration were divided

between the American Locomotive Company and the Lima Locomotive Corporation.

The statement expresses the opinion of J. Rogers Flannery, director of railway equipment and supplies of the War Industries Board, that during the next 30 days the rate of production will show a still greater increase. Normally the output of the Baldwin works has not exceeded 60 locomotives a week. During the week referred to it turned out 87 steam locomotives, 7 gasoline locomotives and 3 electric locomotives, besides making general repairs on 10 steam locomotives. The American Locomotive Company has also accomplished excellent results, for while the number of locomotives is not so great, the tonnage is proportionately as large. It is stated that the government is spending this year in the construction of locomotives for use in France and on the railroads in this country approximately $200,000,000.

Freight Cars

THE BAY CITY FOUNDRY & MACHINERY COMPANY, Bay City, Mich., is inquiring for 17 pairs of freight car trucks.

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for a 40-ft. caboose car.

THE KANOTEX REFINING COMPANY, Arkansas City, Kan., has ordered 50 40-ton tank cars from the American Car & Foundry Company.

THE WHITE EAGLE PETROLEUM COMPANY, Wichita, Kan., has ordered 30 40-ton tank cars from the American Car & Foundry Company.

Passenger Cars

THE PENNSYLVANIA EQUIPMENT COMPANY, 1420 Chestnut street, Philadelphia, Pa., is in the market for one second-hand combination baggage and passenger coach, not over 50 ft. long.

THE UNITED STATES RAILROAD ADMINISTRATION has begun the preparation of designs for 375 standard type passenger cars and 129 combination passenger, baggage, mail and express cars, and specifications will soon be issued on 886 baggage cars of the 60 ft. and 70 ft. types.

Signaling

CHICAGO, ROCK ISLAND & PACIFIC.—An order has been placed with the Union Switch & Signal Company for the material for alternating current block signals to be installed over the Peoria bridge, Peoria, Ill.

ALABAMA GREAT SOUTHERN.—An order has been given to the General Railway Signal Company for a 12-lever, all-electric interlocking, to be installed by the railroad company's forces, at Warrior River drawbridge, Alabama.

CHICAGO, MILWAUKEE & ST. PAUL.—Two Improved Saxby & Farmer interlocking machines are to be installed at Bensonville, Ill., and two at Shermerville, Ill., both to be furnished by the Union Switch & Signal Company.

PENNSYLVANIA, WESTERN LINES.—An order has been placed with the Union Switch & Signal Company for a Saxby & Farmer interlocking, 36 levers, to be installed by the railroad company's forces, at Crafton, Pa.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—A contract has been given to the General Railway Signal Company for a 48-lever electric interlocking machine, and other material, to be installed by the railroad company's forces.

PHILADELPHIA & READING.—A contract has been awarded to the Union Switch & Signal Company for the complete installation of a low-voltage, remote-control interlocking plant on the Lebanon Valley branch. The interlocking apparatus will be located in the station at Palmyra, Pa., approximately one mile from the switches and signals to be controlled. All apparatus will be operated from primary battery.

Supply Trade News

Francis Jordan, sales engineer for the George Cutter Company, of South Bend, Ind., with headquarters at Chicago, has resigned to go with the Wilson Welder & Metals Company at New York.

At a special meeting of the board of directors of the **Independent Pneumatic Tool Company** held in Chicago, October 30, Roger C. Sullivan was appointed a director and elected chairman of the board and a member of the executive committee, to fill vacancies caused by the death of the late **John P. Hopkins.**

J. Weinland, district manager of the Liberty Steel Products Company at Chicago, has been appointed assistant to the president of that company and the Davis Brake Beam Company, with headquarters at New York. **S. W. Midgley,** in charge of the railroad department of the Liberty Steel Products Company, with office at Chicago, succeeds Mr. Weinland as district manager; effective November 1.

Thomas D. Crowley, sales agent of the Madden Company, Chicago, has been appointed assistant general sales agent of the Sellers Manufacturing Company, Chicago. Mr. Crowley was born at Clinton, Iowa, on August 18, 1884. He first entered railway service in 1901, as a timekeeper in the track department of the Chicago & North Western. He was later assistant foreman and extra gang foreman in the same department and in 1907 was appointed assistant roadmaster on the Wisconsin division with headquarters at Milwaukee. In 1909 he was appointed supervisor of materials in the general storekeeper's department at Chicago and subsequently was appointed roadmaster with headquarters at Sparta, Wis. In April, 1914, he went with the Madden Company as sales agent and continued with that firm until his appointment as assistant general sales agent of the Sellers Manufacturing Company, a new position in that firm.

T. D. Crowley

Charles G. Du Bois has been elected vice-president of the Western Electric Company, Incorporated. Mr. Du Bois entered the employ of the company in 1891 at its New York office, and occupied successively the positions of chief clerk, secretary and supervisor of branch houses. In 1907 he became comptroller of the American Telephone & Telegraph Company and in this capacity inaugurated and supervised a comprehensive system of accounting for the Bell telephone system. During the winter of 1917-1918, Mr. Du Bois was in Washington in the capacity of comptroller of the American Red Cross, which position he still retains. Mr. Du Bois is 48 years of age and graduated from Dartmouth College in 1891. He is a director of the Western Electric Company, Incorporated, and other corporations.

Canadian Locomotive Company, Ltd.

The annual report of the Canadian Locomotive Company, Ltd., for the year ending June 30, 1918, shows a profit from operation of $677,937, after charging business profits war tax and all other charges except bond interest and depreciation and adding interest from investments. This compares

with $721,255 for the year ended June 30, 1917, and with the exception of last year, represents the largest profits since the first annual report of 1912. There was deducted from the profits $90,000 for interest on first mortgage bonds; $25,000 as provision for special replacements, and $100,000 for depreciation; and $225,000 was paid in dividends on the common and preferred stock. The balance to the credit of profit and loss at the close of the year, was $929,417, as compared with $690,577 last year. In his report, Aemilius Jarvis, chairman of the board, says:

"The prospects for the coming year are of the brightest. We have contracts in hand that will keep our shops fully occupied for many months to come, all taken at satisfactory prices, and unless something occurs in the matter of supplies, material, or something unforeseen, our next year's statement should be as satisfactory."

The general balance sheet follows in brief:

ASSETS

Fixed assets—		
Real estate, buildings, plant and equipment, including goodwill ($2,722,006):		
Balance, 1st July, 1917	$5,495,072	
Additions during year	60,234	
	$5,555,306	
Less: Sales and deductions	63,756	
		$5,491,550
Sinking fund investment account		47,907
Investments in Dominion of Canada 5½ per cent Victory Bonds	$248,916	
Current assets—		
Work-in-progress, at cost, less cash received on account thereof	496,885	
Materials and supplies	390,663	
Trade accounts receivable, less reserve for bad debts	415,239	
Officials' and employees' balances, including balance of amount due from latter for Victory Bonds purchased on their behalf	29,733	
Cash in banks and on hand	567,006	
		2,148,442
Deferred charges to operations		7,045
		$7,694,944

LIABILITIES

Capital stock—		
7 per cent cumulative preference shares, fully paid.	$1,500,000	
Ordinary shares, fully paid	2,000,000	
		$3,500,000
First mortgage bonds		1,500,000
Current liabilities—		
Trade accounts payable, wages and other charges accrued and due	$936,370	
Bond interest accrued	45,000	
Dividend No. 26	26,250	
Dividend No. 4	30,000	
		1,037,620
Reserves—		
General depreciation	$450,000	
Amortization of expenditure on munition equipment	65,000	
Special replacements	165,000	
Sinking fund	47,907	
		727,907
Profit and loss accounts		929,417
		$7,694,944

Trade Publications

FLANGE OILERS.—The Detroit Lubricator Company, Detroit, Mich., has issued catalogue F-6, illustrating and describing the Detroit automatic flange oiler.

PORTABLE CRANES AND HOISTS.—The complete line of portable floor cranes and hoists manufactured by the Canton Foundry & Machine Company, Canton, Ohio, is listed in a 34-page catalogue issued by that company. The construction and operation of the cranes is described in detail and each type is illustrated and the principal dimensions given.

HEAT INSULATION.—Nonpareil high pressure blocks and cement for heat insulation is the subject of a 20-page catalogue published by the Armstrong Cork & Insulation Company, Pittsburgh, Pa. This material is used for insulating boilers, ovens, feedwater heaters, tanks, etc. Various installations in which Nonpareil blocks or cement were used, are illustrated in the catalogue.

HOISTING MACHINERY.—The equipment manufactured by the Brown Hoisting Machinery Company, Cleveland, Ohio, consisting of trolleys, traveling and portable cranes, electric hoists, etc., is presented in a complete and attractive catalogue, No. D-1919, containing 56 pages, 8½ in. by 11 in., and over 100 illustrations. A large amount of data is also given in tabular form as to prices, dimensions and clearances.

Railway Construction

CHICAGO & NORTH WESTERN.—This company will soon construct a passenger station and subway at Great Lakes, Ill., the aggregate cost of which is estimated at $200,000. The station will be a one-story frame stucco building, with basement and composition roof, 110 ft. by 30 ft. The subway will be constructed of reinforced concrete. This will have a width of 66 ft. and will pass under the tracks of the Chicago & North Western and the Chicago, North Shore & Milwaukee. John Marsch, Chicago, has the contract for the subway; J. A. Sackley & Co., Chicago, the contract for the excavating, and the contract for the station building has not yet been let. The road's own forces will construct the retaining wall.

The North Western is also building a roundhouse and a repair shop addition at Ashland, Wis., the contract for which was awarded to L. O. Peppard, Minneapolis, Minn.

GRAND TRUNK PACIFIC.—Improvements are now being carried out at Edmonton, Alta., as follows:

Four stall extension to roundhouse; 10,000 ft. additional trackage in repair yard; 5,400 ft. additional trackage in freight yards, and extension to storage tracks, 11,000 ft.

ILLINOIS CENTRAL.—This road has awarded a contract to A. W. Stoolman, Champaign, Ill., for the construction of a one-story frame freight house, 200 ft. by 40 ft., and the alteration of a passenger station at Benton, Ill. A platform will be constructed on one side of the freight house, 18 by 200 ft. These improvements will cost about $30,000.

The Illinois Central will also build additions on each end of an ice house at Waterloo, Iowa, which will increase the capacity of the structure by 5,000 tons. The cost of the additions will be about $27,000.

The road plans to build a frame engine house, 38 ft. by 240 ft., at Birmingham, Ala., to provide space sufficient for four Mallet locomotives.

NEW YORK CENTRAL.—This road has given a contract to the R. W. Smith Corporation, New York, to build four yard offices of frame construction at Syracuse, N. Y. One of the offices is to be a two-story building, 36 ft. high, 30 ft. wide, and 60 ft. long, and the other three are to be one-story buildings, 18 ft. high, 25 ft. wide and 41 ft. long.

PENNSYLVANIA RAILROAD, EASTERN LINES.—This road has given a contract to Roydhouse Arey & Co., Philadelphia, Pa., to build a frame roundhouse at Emporium Junction, Pa. The work is now under way and will cost about $60,000.

PENNSYLVANIA RAILROAD, WESTERN LINES.—This road has under construction at Wellsville, Ohio, various engine house and shop improvements, the plans for which have been prepared in the office of R. Trimble, chief engineer of construction, Pittsburgh, Pa., which office is also directly supervising the work.

PEORIA, HANNA CITY & WESTERN.—This company has been incorporated with a capital stock of $75,000 to build and operate a railroad from Hollis Junction, Peoria county, Ill., to Hanna City. The incorporators are: E. J. Case, Thomas Newsam, Warren Sutliff, Wm. Newsam, George Deemy and Walter J. Marsh.

PHILADELPHIA & READING.—A contract has been given to A. L. Carhart for building a six-track rectangular brick engine house, supported on concrete foundations, at Rutherford, Pa. The building will be 133 ft. wide by 115 ft. long, with extension for fan house, foreman's office and equipment for boiler washing system. The contract also includes the construction of an outside inspection pit, 150 ft. long.

RARITAN RIVER RAILROAD.—This road has awarded a contract to the Austin Company, of Cleveland, Ohio, for the construction of a 12-stall, reinforced concrete engine house; a machine shop, 100 ft. long; a boiler house, and a store house, each 80 ft. long; to be built at South Amboy, N. J., in 100 working days, at an approximate cost of $196,490.

Railway Officers

Railroad Administration

Central Administration

Charles A. Lutz has been appointed treasurer of the United States Railroad Administration, vice **L. G. Scott,** comptroller of the Wabash Railway Company, acting treasurer, resigned. Mr. Lutz was formerly chief of the bureau of carriers' accounts of the Interstate Commerce Commission and later comptroller of the American Express Company.

Federal and General Managers

E. E. Calvin, federal manager of the Union Pacific, with office at Omaha, Neb., has had his authority extended over the Salina Northern, effective November 1.

The jurisdiction of **C. M. Kittle,** federal manager of the Illinois Central, with headquarters at Chicago, has been extended over the Dunleith & Dubuque Bridge, effective October 30.

The jurisdiction of **C. G. Burnham,** federal manager of the Chicago, Burlington & Quincy and other smaller roads, with office at Chicago, will also have jurisdiction over the Hannibal Union Depot and the Winona Bridge Railroad.

The Eastern Texas and the Dallas Terminal Railroad & Union Depot have been added to the jurisdiction of **J. L. Lancaster,** federal manager, at Dallas, Texas, and the Valley Terminal Railroad has been included in the jurisdiction of **A. Robertson,** federal manager, with headquarters at St. Louis, Mo.

James Russell, formerly vice-president of the Denver & Rio Grande, has been appointed general manager of that road, the Rio Grande Southern, the Denver Union Terminal, the Salt Lake City Union Depot and Railroad and the Pueblo Union Depot and Railroad, with headquarters at Denver, Colo., succeeding **E. L. Brown,** resigned on account of ill health.

J. E. Gorman, federal manager of the Rock Island Lines, with headquarters at Chicago, has had his jurisdiction extended over the Des Moines Union, the Des Moines Western and the Iowa Transfer. **J. A. Wagner,** superintendent of the Des Moines Union, has been appointed general manager of that road, the Des Moines Western and the Iowa Transfer, with headquarters at Des Moines, Iowa.

Operating

The jurisdiction of **E. L. King,** superintendent of telegraph of the Southern Pacific, with headquarters at San Francisco, Cal., has been extended over the Arizona Eastern.

G. F. Hawks, general manager of the El Paso & Southwestern and the El Paso Union Passenger Depot, has been appointed federal manager, with office at El Paso, Texas.

W. T. Peyton, assistant general superintendent of the Ft. Worth & Denver City, has been appointed superintendent of Ft. Worth terminals, with headquarters at North Ft. Worth, Texas.

G. G. Moore has been appointed superintendent of the Southern Pacific Terminal Company and the Galveston Wharf Company, with jurisdiction over all terminals on Galveston Island. His headquarters are at Galveston, Tex.

J. R. Loftis, trainmaster on the Utah lines of the Denver & Rio Grande at Thistle, Utah, has been appointed assistant superintendent of the Green River division, with office at Helper, Utah, to succeed **E. F. Marshall,** transferred to the Colorado lines; effective November 1.

H. O. Halsted, general superintendent of transportation of the Pere Marquette, with headquarters at Detroit, Mich., has had his authority extended over the Pere Marquette, the Ann Arbor, the Grand Trunk Western Lines and other roads and car ferry lines under the jurisdiction of Federal Manager F. H. Alfred.

F. E. Sanborn has resigned as general superintendent of the Maine Central, with office at Portland, Maine, and has been assigned to other duties; the office of general superintendent has been abolished. **F. O. Wood,** assistant superintendant at Portland, has been appointed superintendent transportation, in charge of the transportation and car service departments, with office at Portland, and **H. R. Withee,** assistant superintendent at Bangor, has been appointed assistant superintendent, with office at Portland, vice Mr. Wood.

Financial, Legal and Accounting

Richard A. White, general auditor of the New York Central at New York, has been appointed federal auditor of the New York Central, the Lake Erie & Pittsburgh, the Troy Union Railroad, the Central New York Southern and the Cherry Tree & Dixonville, with headquarters at New York.

Frank J. Burke, assistant land and tax commissioner of the Texas & Pacific, has been appointed land and tax agent, in charge of land and tax matters for the receiver, with office at Dallas, Texas. **W. H. Abrams** will continue as land and tax commissioner, acting in an advisory capacity; effective October 15.

W. C. Logan, auditor of the Ft. Worth & Denver City, has been appointed also auditor of the Ft. Worth Belt, with office at Ft. Worth, Texas, succeeding **O. W. Matthews,** resigned. **W. O. Hamilton,** secretary and treasurer of the Ft. Worth & Denver City, with headquarters at Ft. Worth, succeeds Mr. Matthews as acting federal treasurer of the Ft. Worth Belt.

S. L. Merriam, general counsel, and **J. C. Bills,** assistant general counsel of the Pere Marquette, have been appointed general solicitor and assistant general solicitor, respectively of that road, the Ann Arbor, the Grand Trunk Western Lines and other roads and car ferry associations under the jurisdiction of Federal Manager F. H. Alfred, both with headquarters at Detroit, Mich.

W. H. Burns, general auditor of the Chicago, Rock Island & Pacific, has been appointed federal auditor of that road and the Chicago, Rock Island & Gulf, with headquarters at Chicago. **William Hodson** has been appointed acting federal treasurer of the Chicago, Rock Island & Pacific, with office at Chicago, succeeding **Carl Nyquist,** who has resigned to become treasurer of the corporation.

C. C. Gleesner, auditor of freight claims of the Baltimore & Ohio, with office at Baltimore, Md., has been appointed freight claim agent in charge of loss and damage freight claims and their prevention, of the Baltimore & Ohio, Eastern Lines; the Coal & Coke; the Wheeling Terminal Railroad; the Western Maryland; the Cumberland Valley, and the Cumberland & Pennsylvania, with office at Baltimore, Md.

E. A. Stockton, general auditor of the Pennsylvania Railroad, Eastern Lines, with office at Philadelphia, Pa., has been appointed federal auditor of the same lines; the West Jersey & Seashore; the New York, Philadelphia & Norfolk, and the Huntingdon & Broad Top Mountain, and **J. S. Donaldson,** assistant controller, with office at Philadelphia, has been appointed assistant federal auditor on all the roads above named.

D. W. McLeod, auditor of the Gulf, Colorado & Santa Fe and the Ft. Worth Union Passenger Station, with headquarters at Galveston, Texas, has had his jurisdiction extended to include the Houston Belt & Terminal, succeeding **J. W. McCullough,** resigned. **A. C. Torbert**, local treasurer of the former roads, has also been appointed acting treasurer of the Houston Belt & Terminal, with office at Galveston, in place of **T. C. Dunn,** resigned.

Frank R. Austin, who has been appointed federal auditor of the Chicago & Eastern Illinois and the Evansville & Indianapolis, with headquarters at Chicago, was born at Evansville, Ind. He began railway work in August, 1890, in the auditor's office of the Evansville & Terre Haute, where he

remained for five years, when he was transferred to the treasurer's office. Two years later he returned to the auditor's office, serving in various capacities until March, 1906, when he was appointed auditor. He held that position until July, 1911, when the Evansville & Terre Haute was consolidated with the Chicago & Eastern Illinois, at which time he was promoted to assistant auditor of the latter road. His appointment as federal auditor became effective August 5.

T. O. Edwards, general auditor of the Southern Pacific, lines south of Ashland, Ore., with office at San Francisco, Cal., has been appointed also federal auditor of the Arizona Eastern. **W. F. Ingram,** acting federal treasurer of the former lines, with headquarters at San Francisco, will also have authority over the latter road. **Robert Adams,** assistant general auditor of Southern Pacific lines south of Ashland, and assistant federal auditor of the lines north of Ashland, with office at San Francisco, has been appointed also assistant federal auditor of the Arizona Eastern. The following officers of the Southern Pacific, all with headquarters at San Francisco, will also have jurisdiction over the Arizona Eastern: **F. L. McCaffery,** auditor of disbursements; **F. W. Pope,** auditor of freight accounts; **O. F. Giffin,** auditor of passenger accounts, and **W. H. Dewey,** auditor of equipment service accounts.

Traffic

Marius de Brabant has been appointed assistant general freight and passenger agent of the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., effective November 1.

M. A. Cummings and **A. G. Little** have been appointed assistant general freight agents of the Southern Pacific lines south of Ashland, Ore., both with headquarters at San Francisco, Cal.

F. V. Berry, assistant general freight agent of the Maine Central, at Portland, Maine, has been appointed general freight agent, with office at Portland, vice **W. K. Sanderson,** assigned to other duties; the position of assistant general freight agent has been abolished.

E. H. Shaw, assistant traffic manager of the Southern Railroad, with office at Washington, D. C., has been appointed traffic manager of the Southern Railroad lines and associated railroads, with jurisdiction over all lines except the Piedmont & Northern, vice **Randall Clifton,** deceased.

B. W. Herrman, general freight agent of the Norfolk & Western, with office at Columbus, Ohio, has been appointed general freight agent, with office at Roanoke, Va., and **S. S. Bridgers,** assistant general freight agent at Roanoke, has been transferred as assistant general freight agent to Columbus, Ohio; **S. M. Stevenson** has been appointed assistant general freight agent, assigned to special duty, with office at New York City, and **C. A. Cowles** has been appointed assistant general freight agent, with office at Roanoke.

The Grand Trunk Western Lines having been placed under federal control and grouped with the Pere Marquette, Ann Arbor, Detroit & Mackinac and other short lines under Federal Manager **F. H. Alfred,** the consolidation of the passenger department is announced with the following officers in charge of all lines: **W. E. Wolfenden,** general passenger agent, and **John Dunphy,** assistant general passenger agent, Detroit, Mich.; **J. D. McDonald,** assistant general passenger agent, Chicago; **A. E. Plumer,** general baggage agent, Detroit; **O. L. Kinney,** Chicago; **J. W. Kearns,** Detroit; **Neil DeYoung,** Grand Rapids, Mich.; **F. A. Young,** Saginaw, Mich.; **J. K. Cooper,** Toledo, Ohio; all division passenger agents.

R. P. Paterson, assistant general freight agent of the Pere Marquette, with headquarters at Detroit, Mich., has had his jurisdiction extended over the Grand Trunk, Western Lines; the Ann Arbor; the Detroit & Mackinac; the Detroit & Toledo Shore Line; the Detroit, Bay City & Western; the Port Huron Southern; the Port Huron & Detroit; the Fort Street Union Depot Railroad, and the Lake Michigan Car Ferry Association. **R. L. Burnap,** assistant freight traffic manager of the Grand Trunk at Chicago, has been appointed assistant general freight agent of the lines named, with the same headquarters. **H. S. Bradley,** traffic manager of the Ann Arbor, has been appointed chief of the tariff bureau of all the roads mentioned above, with office at Detroit. **F. A. Butterworth,** assistant general freight agent of the Pere Marquette at Chicago, has been appointed division freight agent of that road and the Grand Trunk Western Lines, with the same headquarters. **W. H. Spicer,** division freight agent of the Grand Trunk at Detroit, will also have jurisdiction over the Pere Marquette; the Ann Arbor; the Pontiac, Oxford & Northern; the Port Huron Southern; the Port Huron & Detroit, and the Detroit & Toledo Shore Line; and **P. Birrel,** commercial agent of the Pere Marquette at Detroit, has been appointed general agent of those roads. **C. A. Gormaly,** commercial agent of the Grand Trunk at Chicago, has been appointed general agent of that road and the Pere Marquette, at the same place. **F. M. Briggs,** division freight agent of the Pere Marquette at Grand Rapids, Mich., will also have authority over the Grand Trunk Western Lines. **A. Z. Mullins,** commercial agent of the Grand Trunk at Grand Rapids, has been appointed district representative of the Grand Trunk Western Lines and the Pere Marquette, with the same headquarters. **T. W. Avis,** traveling freight agent of the Pere Marquette at Grand Rapids, has been appointed district representative of that road and the Ann Arbor, at the same place. The jurisdiction of **W. Henderson,** division freight agent of the Pere Marquette at Saginaw, Mich., will include the Grand Trunk Western Lines and the Ann Arbor. **C. E. Wagner,** commercial agent of the Grand Trunk at Saginaw, has been appointed district representative at that point for the Pere Marquette; the Pontiac, Oxford & Northern, and the Detroit & Huron. **W. G. MacEdward,** general freight and passenger agent of the Detroit & Mackinac at Bay City, Mich., has been appointed division freight agent of that road and the Detroit, Bay City & Western, with the same headquarters. **R. W. Youngs,** division freight and passenger agent of the Pere Marquette at London, Ont., will retain the title of division freight agent only. **J. W. Redmond,** commercial agent of the Pere Marquette at Toledo, Ohio, has been appointed general agent of that road, the Ann Arbor, and the Detroit & Toledo Shore Line, with office at Toledo. **F. W. Goldie,** general agent of the Pere Marquette at Milwaukee, Wis., will also be agent for the Grand Trunk Western Lines. **W. F. Kerwin,** general agent of the Ann Arbor at Menominee, Mich., has been appointed district representative at that point, and **A. Allison,** general agent at Manistique, Mich., has been appointed district representative at the same place.

Engineering and Rolling Stock

O. A. Garber, master mechanic of the Illinois Central at East St. Louis, Ill., has been transferred to Waterloo, Iowa, as master mechanic of the Minnesota and Iowa divisions, succeeding **Norman Bell,** resigned to enter military service.

G. W. Cundiff has been appointed road foreman of engines of the Mobile & Ohio and the Southern Railroad in Mississippi, with headquarters at Jackson, Tenn., to succeed **A. J. Merriwether,** who has been appointed fuel supervisor, with office at Jackson, Tenn.

G. C. Wilson, electrical engineer of the Union Pacific, with headquarters at Omaha, Neb., has been appointed electrical engineer of the Central of Georgia, with headquarters at Savannah. **H. B. Gamer** succeeds Mr. Wilson as acting electrical engineer of the Union Pacific.

Fullerton P. McGough, manager of the Pittsburgh office of the North American Railway Construction Company, Chicago, has been appointed division engineer of the Baltimore & Ohio, with office at Grafton, W. Va., succeeding **G. F. Eberly,** who has been transferred to the construction department, in charge of the lines between Connellsville and Fairmont.

The jurisdiction of **Maynard Robinson,** division master mechanic of the Gulf, Colorado & Santa Fe at Temple, Tex., has been extended to include the old Galveston division. The Galveston and Southern divisions have been combined and will be known as the Southern division. **R. E. Bell,** division master mechanic at Galveston, Tex., has been appointed joint master mechanic of the Galveston Terminal Association.

J. E. Murray, chief electrician on the Chicago & North Western, with headquarters at Chicago, has resigned to become electrical and mechanical engineer of the Grand Trunk Western Lines, with headquarters at Battle Creek, Mich. **Irving A. Peters,** foreman of the electrical department on the Chicago & North Western at Chicago shops, succeeds Mr. Murray as chief electrician of the entire system under the jurisdiction of the mechanical department.

N. L. Arbuckle, resident engineer on the Cleveland, Cincinnati, Chicago & St. Louis, at Columbus, Ohio, has been appointed acting engineer maintenance of way of the Indianapolis Terminal division, with headquarters at Indianapolis, Ind., succeeding **I. M. Brown,** deceased. **R. B. Stokley,** acting engineer maintenance of way on the Cincinnati-Sandusky division, with office at Springfield, Ohio, has been transferred to the Peoria & Eastern division in the same capacity, with headquarters at Indianapolis, Ind., to succeed **L. B. Elliott,** who takes the place of Mr. Stokley. Effective November 1.

Ernest R. Breaker, whose appointment as assistant mechanical superintendent of the San Antonio, Uvalde & Gulf, with headquarters at North Pleasanton, Texas, has been announced in these columns, was born at Fayette, Mo., on July 5, 1886. He was educated at Washington University, and began railway work in April, 1909, as assistant engineer on construction on the San Antonio, Uvalde & Gulf, in charge of bridge work. In 1911 he was made chief engineer in charge of construction and maintenance, and in 1915 he was appointed also mechanical engineer. He was given complete charge of the mechanical and maintenance departments in January last, and when the road was placed under federal control recently was appointed assistant mechanical superintendent in charge of motive power and car departments and maintenance of way and valuation.

Corporate

Executive, Financial, Legal and Accounting

R. C. Vaughan, assistant to third vice-president of the Canadian Northern, with office at Toronto, Ont., has been appointed assistant to the president.

Louis C. Fritch, who was elected vice-president and corporate engineer of the Chicago, Rock Island & Pacific and appointed vice-president of the Minneapolis & St. Louis, as mentioned in the *Railway Age* of October 18, was educated at the University of Cincinnati, where he studied civil engineering and also took a course in law. He entered railway service in 1884 with the Ohio & Mississippi as supervisor's assistant, and later was successively assistant engineer and engineer of maintenance of way. On November 1, 1893, he was appointed division engineer of the Baltimore & Ohio Southwestern, which had absorbed the Ohio & Mississippi, and in September, 1899, he became superintendent of the Mississippi division of the former road, which position he held until November, 1902. Mr. Fritch went to the Illinois Central in February, 1904, being engaged on special work until March, 1905, when he was made assistant to the general manager. In November, 1906, he was appointed assistant to the president, and on March 1, 1909, he was made consulting engineer. He left the Illinois Central in November of the latter year to go to the Chicago Great Western as chief engineer. In March, 1914, he became assistant to the president of the Canadian Northern, and from August, 1915, to June 15, 1917, he was general manager of the lines east of Port Arthur, leaving that road in May, 1917, to become general manager of the Seaboard Air Line. He remained in the latter position until June of this year, when he established an office in Chicago as consulting engineer. He now becomes vice-president and corporate engineer of the Chicago, Rock Island & Pacific and the Minneapolis & St. Louis, with headquarters at Chicago.

L. C. Fritch

R. P. Ormsby, assistant secretary of the Canadian Northern, with office at Toronto, Ont., has been appointed secretary of the company, succeeding **W. H. Moore,** resigned.

G. B. Wood, assistant to the president of the Kansas City Southern, with headquarters at Beaumont, Texas, has been transferred to Kansas City, Mo., with the same title, succeeding **R. J. McCarty,** vice-president, resigned.

R. M. Calkins, formerly vice-president in charge of traffic of the Chicago, Milwaukee & St. Paul, has been elected president, with headquarters at Chicago, succeeding **H. E. Byram,** who was appointed federal manager of the road. Mr. Calkins was born on August 12, 1863, at Ogdensburg, N. Y. He began railway work in 1879 as clerk and telegraph operator for the Chicago, Milwaukee & St. Paul at Monticello, Iowa, and from 1881 to June, 1892, was local agent at various points. He was then for four years agent at Kansas City, Mo., and from June, 1896, to June, 1898, was division freight and passenger agent at Mason City, Iowa. In June, 1898, he left the St. Paul to become general freight and passenger agent of the Des Moines Northern & Western, at Des Moines, Iowa, returning to the former road in February, 1899, as assistant general freight agent at Chicago. On February 1, 1909, he was appointed general freight and passenger agent of the Chicago, Milwaukee & Puget Sound and the Montana Railroad, with headquarters at Butte, Mont., and in June of the following year he was made traffic manager of the Chicago, Milwaukee & Puget Sound. From January 1, 1913, to December 15, 1917, he was traffic manager of the Puget Sound lines of the Chicago, Milwaukee & St. Paul, with headquarters at Seattle, Wash., and on the latter date he was elected vice-president in charge of traffic for the entire system, including subsidiary lines, with headquarters at Chicago. When the St. Paul was placed under federal control, Mr. Calkins was appointed traffic manager, but resigned in August last to engage in shipbuilding work in Puget Sound.

R. M. Calkins

M. Dailey has been appointed vice-president in charge of operation on the Edmonton, Dunvegan & British Columbia, the Alberta & Great Waterways Railway and the Central Canada Railway, with headquarters at Edmonton, Alta.

M. H. McLeod, general manager and chief engineer of the Canadian Northern, with office at Winnipeg, Man., has been appointed vice-president of operation, maintenance and construction, with jurisdiction over all lines and headquarters at Toronto, Ont.

F. B. Simpson, assistant secretary of the Chicago, Milwaukee & St. Paul, has been elected treasurer; **R. J. Marony,** assistant secretary, has been elected assistant treasurer; **John A. Peterson** has been elected assistant treasurer, and **L. J. Tracy** has been appointed controller.

H. W. Wenham has been appointed auditor of the corporate organizations of the Alabama & Vicksburg Railway Company and the Vicksburg, Shreveport & Pacific Railway Company,

with office at New Orleans, La., in place of **H. H. LeRoy,** who is now auditor of those railroads under the United States Railroad Administration.

William U. Moyer has been appointed assistant to the president of the Pennsylvania Railroad Company, with headquarters at Philadelphia, Pa. Mr. Moyer was born in 1881, at Philadelphia, and has been in the service of the Pennsylvania for 21 years. He first served in the office of the auditor of passenger receipts, and in September, 1900, was transferred to the office of Samuel Rea, who was then fourth vice-president. Later he served as chief clerk to Mr. Rea when he became second vice-president and afterward president. Mr. Moyer now becomes assistant to president, as above noted.

W. H. Coverdale, chairman of the board of the Pittsburgh & Western, has also been elected vice-president of that company and president of the West Side Belt, with headquarters at New York. **H. E. Farrell,** president of the Pittsburgh & Western, also has been elected vice-president of the West Side Belt, with office at Pittsburgh, Pa. **Arthur H. Van Brunt** has been appointed advisory counsel, and **J. J. O'Brien** has been appointed assistant secretary of both companies, with headquarters at New York. **John S. Wendt** has been appointed general attorney of both companies, and **D. W. Summerfield** has been appointed secretary and treasurer, both with headquarters at Pittsburgh.

Operating

E. T. Mulquin has been appointed manager of the Sugar Land Railway, with office at Sugar Land, Texas.

J. L. Jamieson, trainmaster of the Canadian Pacific at Ignace, Ont., has been promoted to superintendent, with headquarters at Kenora, Ont., succeeding **J. M. MacArthur,** who has been transferred to Medicine Hat, Alta., as superintendent.

Engineering and Rolling Stock

W. Walton has been appointed division master mechanic of the Canadian Pacific, with office at Farnham, Que., succeeding **W. Wells,** transferred.

George S. Goodwin, mechanical engineer of the Rock Island Lines, has been appointed corporate engineer of equipment of the Chicago, Rock Island & Pacific, with headquarters at Chicago, having jurisdiction over matters relating to the maintenance of equipment department involving the corporation's interests. Mr. Goodwin was born at Corinth, Me., on November 29, 1876, and was graduated from Cornell University in 1899, with the degree of mechanical engineer. While attending college he spent his vacations in railway shop work and specialized in railway engineering during the last year. He entered the service of the Chicago, Milwaukee & St. Paul in June, 1899, as a special apprentice at West Milwaukee, Wis., and subsequently was employed in special test work, etc., during which time he had charge of the company's dynamometer car on other roads as well as the Chicago, Milwaukee & St. Paul. In May, 1904, he entered the mechanical engineer's office of the Great Northern at St. Paul, Minn., where he was engaged in work connected with the standardization of locomotive and car details and also the design of new equipment. Mr. Goodwin went to the Chicago, Rock Island & Pacific in January, 1906, as chief draftsman at Chicago, and in May, 1910, he was promoted to assistant mechanical engineer at Silvis, Ill. He was appointed mechanical engineer of the Rock Island Lines, in charge of locomotive design, with headquarters at Chicago, in June, 1913, which position he held at the time of his recent appointment as corporate engineer of equipment of the Chicago, Rock Island & Pacific Railway.

G. S. Goodwin

D. W. Gross, valuation engineer of the Atlantic Coast Line and the Charleston & Western Carolina, has been appointed corporation engineer of those companies, with headquarters at Wilmington, N. C.

Railway Officers in Military Service

Daniel Willard, president of the Baltimore & Ohio, has been appointed colonel of engineers in the United States Army, and plans to sail at once for France, to report to Brigadier General Atterbury. Mr. Willard has been granted indefinite leave of absence, and **L. F. Loree,** who is a member of the executive committee of the Baltimore & Ohio, will act as chairman of the committee during his absence. Mr. Willard's selection was made by General Pershing at the request of the French Government, which desires the services of an experienced American railroad operating officer as an assistant to the French Transport Department. The French Government is said to have decided to take over the operation of all French Railways.

Obituary

H. Ruben, general baggage agent of the Chicago & Alton, died at his home in Chicago on October 26, aged 54 years.

W. G. Dungan, assistant superintendent of the Chicago, Burlington & Quincy, at Deadwood, S. D., died on October 22.

Captain William Wallace Newcomb, a former employee of the *Railway Age,* died of pneumonia, October 10, three days after the arrival of the transport on which he crossed to France. Captain Newcomb received his commission in the Ordnance Department shortly after the entrance of the United States into the war. He had but recently been made New York manager of the brokerage house of Jackson & Curtis. He was graduated from Yale University in 1908 and he was in charge of the copy service department of the *Railway Age* from 1911 to 1913, and did much to build up this service. He was a man of unusually fertile and original thought, and advertising came to him rather as a natural gift than as the result of labored study. The underlying reason for his rather surprisingly continuous flow of new ideas was the remarkable capacity he had for close observation. His brain was apparently in a peculiarly receptive mood for detailed impression. His almost boyishness of manner sometimes failed to convey to a stranger the power of analysis and minute observation which he possessed. In 1913 he was offered the position of assistant to the new president of the McCall Publishing Company, New York. Within the year he was elected secretary of the company, and for four years had the duties and responsibilities in the management of a very large business that are not often entrusted to so young a man or to a man whose early training had not been directly in that particular business.

Captain W. W. Newcomb